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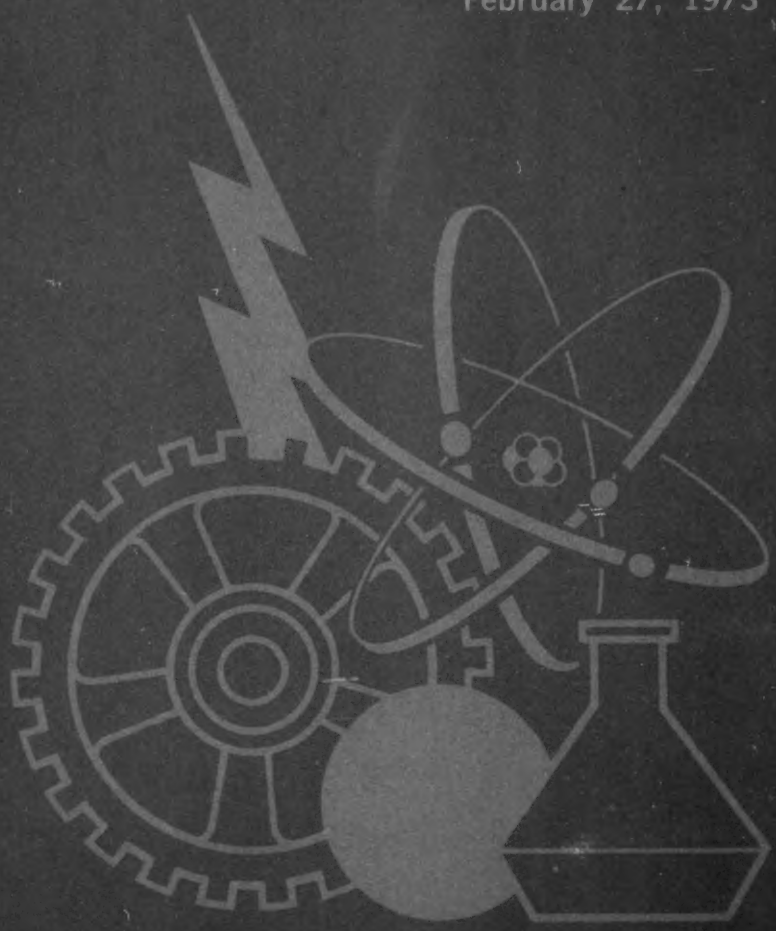

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February 27, 1973 Volume 907 Number 4

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PATENT OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of January 1973

Examiner affirmed	136
Examiner affirmed in part	12
Examiner reversed	29
Total	177

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,790,516, Wright and Butler, VEHICLE BRAKE ASSEMBLY; **2,921,650,** Butler, DISC BRAKE; **3,392,809,** Hodkinson and Evans, same; **Re. 24,870,** Butler, VEHICLE BRAKE, filed Dec. 5, 1967, D.C., E.D. Mich. (Detroit), Doc. 30629, *Dunlop Company Ltd.* v. *Kelsey-Hayes Company.* Judgment, patents infringed, May 19, 1972.

2,834,809, Britt and McConnell and Schutte, ABSORBENT PAPER, filed Aug. 26, 1960, D.C., E.D. Wis. (Madison), Doc. 60–C–156, *Scott Paper Co.* v. *Fort Howard Paper Co.* Stipulation, dismissal under Rule 41(a) F.R.C.P., June 16, 1972.

2,892,575, J. M. Turk, DISPENSER VALVE STRUCTURE; **2,902,760,** same; **3,300,105,** J. L. Rosen, same filed Aug. 1, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–1757–F, *Hunt-Wesson Foods Inc. and Super Whip Valve Mfg. Company* v. *Clayton Corporation.*

2,921,650. (See 2,790,516.)

2,902,760. (See 2,892,575.)

3,103,666, A. R. Bone, TAG ATTACHING APPARATUS, filed Sept. 8, 1972, D.C. Hawaii (Honolulu), Doc. 72–3642, *Dennison Manufacturing Company* v. *Halmac Inc. et al.*

3,103,703, H. A. Ludewig, MOLD FOR PRODUCING FLEXIBLE BELTS WITH TEETH, filed Aug. 18, 1967, D.C., N.D. Ohio (Cleveland), Doc. C–67–602, *Didactics Corp.* v. *Sargent-Welch Scientific Company.* Consent judgment, Sargent-Welch Scientific Company formerly The Welch Scientific Company is the owner, Sept. 18, 1972.

3,115,207, A. M. Wiggins, UNIDIRECTIONAL MICROPHONE, filed Sept. 1, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2185, *Electro-Voice Inc.* v. *Shure Brothers Inc.*

3,316,348, J. R. Anderson, PROCESS AND APPARATUS FOR TEMPORARILY INDICATING CORRECTIONS IN TEXT OF PRINTED MATTER, filed Mar. 11, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c584, *LaSalle Street Press Inc.* v. *Twentieth Century Press Inc.* Consent judgment, defendant restrained, Sept. 27, 1971.

3,178,678, J. H. Krehbiel, WIRE CONNECTOR, filed July 7, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1664, *Molex Inc.* v. *Aro Mfg. Co.* Stipulated complaint herein for infringement be dismissed with prejudice, Sept. 14, 1972.

3,237,485, J. M. Van Vlett, METHOD OF TAP MANUFACTURE, filed July 12, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1683, *Balax Inc.* v. *Continental Screw Co.* By consent of plaintiff cause dismissed for lack of venue and without prejudice, Sept. 30, 1971.

3,261,129, Brydolf and Kellems, PANEL HARDWARE, filed Sept. 11, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–2155–F, *Acme General Corp.* v. *Nodak Corp. and Imperial Mobile Home Suppliers.*

3,300,105. (See 2,892,575.)

3,372,897, E. R. Lee, REAR VIEW MIRROR, filed Jan. 21, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c133, *S. H. Leggitt Company* v. *Allen Electric and Equipment Co.* Court has jurisdiction, claim 4 is valid. The plaintiff's amended and supplemental complaint and defendant's counterclaims, are each dismissed without prejudice, Jan. 19, 1972.

3,495,181, M. G. Reiffin, DIRECT-CURRENT-COUPLED TRANSISTOR POWER AMPLIFIERS; **3,376,388,** same, TRANSISTOR POWER AMPLIFIER WITH PROTECTIVE CIRCUITRY, filed July 26, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1843, *Martin G. Reiffin* v. *Heath Company et al.*

3,392,809. (See 2,790,516.)

3,393,944, H. Reintjes, METHOD FOR PNEUMATICALLY INJECTING SOLID PARTICLES INTO A HIGH PRESSURE ZONE, filed Sept. 12, 1972, D.C. Del. (Wilmington), Doc. 4462, *United States of America* v. *Petrocarb Inc. and Bituminous Coal Research Inc.*

3,432,793, Muska, Schacker and McHattie, GROUNDING CONNECTION FOR ELECTRICAL UNIT, filed Sept. 8, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2234, *William A. Muska, James L. Schacker and Earl E. McHattie* v. *Sierra Elec.*

3,439,450, J. Richards, POROUS BLOCK FOR CONSERVING SOIL MOISTURE, filed Nov. 30, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–2838–DWW, *The Regents of the University of California* v. *Gordon A. Chapman, doing business as Sombrero Sales.* Consent judgment defendant permanently enjoined, Sept. 1, 1972.

3,483,580, Cherry and Shackelford, INFLATABLE FOOTWEAR FORM, filed Apr. 23, 1970, D.C., S.D.N.Y., Doc. 70–C–1656, *Inflat-A-Industries Inc.* v. *Dan-Dee Imports Inc.* Stipulation and order, action settled with prejudice upon terms and conditions indicated; defendant hereby concedes the validity of patent, Sept. 13, 1972.

3,493,879, G. R. Stanley, HIGH POWER HIGH FIDELITY SOLID STATE AMPLIFIER, filed Sept. 6, 1972, D.C., N.D. Ind. (South Bend), Doc. 72–S–172, *International Radio Electronics Corp.* v. *Bruno Eidietis and David Liss, doing business as Audio Specialists.*

3,495,181. (See 3,376,388.)

3,500,586, W. E. Politz, SINK STRAINER MOUNTING MEANS, filed Sept. 12, 1972, D.C., N.D. Ohio (Cleveland), Doc. C72–958, *Stephen A. Young* v. *Jameco Industries Inc. et al.*

3,356,190, Hirsch and Koster, PROTECTIVE PACKAGE AND METHOD OF MAKING SAME, filed Feb. 15, 1972, D.C., S.D.N.Y., Doc. 72–C–686, *Stanley Hirsch* v. *Willcox and Gibbs.* Judgment ordered, defendants Willcox and Gibbs Inc. and Spur Pallet have judgment against the plaintiff, dismissing the complaint, Sept. 5, 1972.

3,620,909, C. R. Gleason, METHOD FOR RECLAIMING PULP FROM WASTE PAPERS, filed Mar. 16, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c684, *Clark Products Inc.* v. *Waste Paper Reclm. Corp. et al.* Stipulation of voluntary dismissal under Rule 41(a), May 24, 1972.

3,631,847, J. C. Hobbs, METHOD AND APPARATUS FOR INJECTING FLUID INTO THE VASCULAR SYSTEM, filed Sept. 6, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2207, *James C. Hobbs II and Barber Colman Co.* v. *Medrad Inc.*

3,632,879, R. Freisinger, AUTOMATIC TELEPHONE DIALER FOR EMERGENCY MESSAGES, filed Aug. 15, 1972, D.C.N.J. (Newark), Doc. 1399–72, *Napco Security Systems Inc.* v. *Atlantic Metal Products Inc.* Consolidated with Civil Action No. 1399–72, *Atlantic Metal Products* v. *Napco Security Systems Inc.*, Sept. 14, 1972.

Re. 24,870. (See 2,790,516.)

Re. 26,518, Mau and Magy, THREAD AND OTHER FORM ROLLING DIES, filed Sept. 12, 1972, D.C., N.D. Ohio (Cleveland), Doc. C–72–959, *The National Rolled Thread Die Co.* v. *E. W. Ferry Screw Products Inc.* Same, filed Sept. 12, 1972, D.C., N.D. Ohio (Cleveland), Doc. C–72–960, *The National Rolled Thread Die Co.* v. *The Lamson and Sessions Co.* Same, filed Sept. 12, 1972, D.C., N.D. Ohio (Cleveland), Doc. C–72–961, *The National Rolled Thread Die Co.* v. *Pratt and Whitney Inc., Colt Industry Operating Inc., and Colt Industries Inc.*

RECOMMENDED INTERNATIONAL NONPROPRIETARY NAMES (REC. I.N.N.): LIST 12 [2]

In accordance with paragraph 7 of the Procedure for the Selection of Recommended International Nonproprietary Names for Pharmaceutical Substances,[1] notice is hereby given that the following are selected as recommended international nonproprietary names.

The inclusion of a name in the lists of recommended international nonproprietary names does not imply any recommendation for the use of the substance in medicine or pharmacy.

RECOMMENDED INTERNATIONAL NONPROPRIETARY NAME (*Latin, English*)	CHEMICAL NAME OR DESCRIPTION AND MOLECULAR FORMULA
aceglatonum aceglatone	D-glucaric acid 1,4 : 6,3-dilactone diacetate $C_{10}H_{10}O_8$
acetyldigitoxinum acetyldigitoxin	α-acetyldigitoxin $C_{43}H_{66}O_{14}$
acidum cinepazicum cinepazic acid	4-(3,4,5-trimethoxycinnamoyl)-1-piperazineacetic acid $C_{18}H_{24}N_2O_6$
acidum dimecroticum dimecrotic acid	2,4-dimethoxy-β-methylcinnamic acid $C_{12}H_{14}O_4$
acidum fenofibricum fenofibric acid	2-[*p*-(*p*-chlorophenoxy)phenoxy]propionic acid $C_{15}H_{13}ClO_4$
acidum iodoxamicum iodoxamic acid	3,3′-[ethylenebis(oxyethyleneoxyethylenecarbonylimino)]bis[2,4,6-triiodobenzoic acid] $C_{26}H_{26}I_6N_2O_{10}$
acidum iolidonicum iolidonic acid	α-ethyl-2,4,6-triiodo-3-(2-oxo-1-pyrrolidinyl)hydrocinnamic acid $C_{15}H_{16}I_3NO_3$
acidum iolixanicum iolixanic acid	2-[2-[3-(*N*-ethylacetamido)-2,4,6-triiodophenoxy]ethoxy]propionic acid $C_{15}H_{18}I_3NO_5$
acidum iomeglamicum iomeglamic acid	3′-amino-2′,4′,6′-triiodo-*N*-methylglutaranilic acid $C_{12}H_{13}I_3N_2O_5$
acidum piromidicum piromidic acid	8-ethyl-5,8-dihydro-5-oxo-2-(1-pyrrolidinyl)pyrido[2,3-*d*]pyrimidine-6-carboxylic acid $C_{14}H_{18}N_4O_3$
acidum protizinicum protizinic acid	7-methoxy-α,10-dimethylphenothiazine-2-acetic acid $C_{17}H_{17}NO_3S$
aclantatum aclantate	4-(2-chloro-*m*-toluidino)-3-thiophenecarboxylic acid, hydroxymethyl ester, acetate (ester) $C_{15}H_{14}ClNO_4S$
acrocinonidum acrocinonide	9-fluoro-11β,16α,17,21-tetrahydroxypregna-1,4-diene-3,20-dione cyclic 16,17-acetal with acrolein $C_{24}H_{29}FO_6$
alfadolonum alfadolone	3α,21-dihydroxy-5α-pregnane-11,20-dione $C_{21}H_{32}O_4$
alfaxalonum alfaxalone	3α-hydroxy-5α-pregnane-11,20-dione $C_{21}H_{32}O_3$
alonimidum alonimid	2,3-dihydrospiro[naphthalene-1(4*H*),3′-piperidine]-2′,4,6′-trione $C_{14}H_{12}NO_3$
amiterolum amiterol	*p*-amino-α-[(*sec*-butylamino)methyl]benzyl alcohol $C_{12}H_{20}N_2O$
amixetrinum amixetrine	1-[β-(isopentyloxy)phenethyl]pyrrolidine $C_{17}H_{27}NO$
amoxicillinum amoxicillin	(—)-6-[2-amino-2-(*p*-hydroxyphenyl)acetamido]-3,3-dimethyl-7-oxo-4-thia-1-azabicyclo[3.2.0]heptane-2-carboxylic acid $C_{16}H_{19}N_3O_5S$
aprindinum aprindine	*N*-[3-(diethylamino)propyl]-*N*-phenyl-2-indanamine $C_{22}H_{30}N_2$
azalomycinum azalomycin	an antibiotic obtained from cultures of *Streptomyces hydroscopicus* var. *azalomyceticus*, or the same substance produced by any other means
bemetizidum bemetizide	6-chloro-3,4-dihydro-3-(α-methylbenzyl)2*H*-1,2,4-benzothiadiazine-7-sulfonamide 1,1-dioxide $C_{16}H_{16}ClN_3O_4S_2$
benaprizinum benaprizine	2-ethylpropylamino)ethyl benzilate $C_{21}H_{27}NO_3$
benperidolum benperidol	1-[1-[3-(*p*-fluorobenzoyl)propyl]-4-piperidyl]-2-benzimidazolinone $C_{22}H_{24}FN_3O_2$
benproperinum benproperine	1-[2-(2-benzylphenoxy)-1-methylethyl]piperidine $C_{21}H_{27}NO$
benserazidum benserazide	DL-serine 2-(2,3,4-trihydroxybenzyl)hydrazide $C_{10}H_{15}N_3O_5$
betamethasoni acibutas betamethasone acibutate	9-fluoro-11β,17,21-trihydroxy-16β-methylpregna-1,4-diene-3,20-dione 21-acetate 17-isobutyrate $C_{26}H_{37}FO_7$
bidimazii iodidum bidimazium iodide	4-(4-biphenylyl)-2-[*p*-(dimethylamino)styryl]-3-methylthiazolium iodide $C_{26}H_{25}IN_2S$
bromopridum bromopride	4-amino-5-bromo-*N*-[2-diethylamino)ethyl]-*o*-anisamide $C_{14}H_{22}BrN_3O_2$
bupranololum bupranolol	1-(*tert*-butylamino)-3-[(6-chloro-*m*-tolyl)oxy]-2-propanol $C_{14}H_{22}ClNO_2$
calcifediolum calcifediol	9,10-secocholesta-5,7,10(19)-triene-3β,25-diol $C_{27}H_{44}O_2$
cambendazolum cambendazole	isopropyl 2-(4-thiazolyl)-5-benzimidazolecarbamate $C_{14}H_{14}N_4O_2S$
carbasalatum calcicum carbasalate calcium	salicylic acid acetate, calcium salt, compound with urea (1 : 1) $C_{18}H_{14}CaO_8 \cdot CH_4N_2O$
cefradinum cefradine	7-[2-amino-2-(1,4-cyclohexadien-1-yl)acetamido]-3-methyl-8-oxo-5-thia-1-azabicyclo-[4.2.0]oct-2-ene-2-carboxylic acid $C_{16}H_{19}N_3O_4S$

[1] *Off. Rec. Wld Hlth Org.*, 1955, *66*, 3 (Resolution EB15.R7); 1969, *173*, 10 (Resolution EB43.R9).

[2] Other lists of recommended international nonproprietary names can be found in *Chron. Wld Hlth Org.*, 1955, *9*, 185; *WHO, Chronicle*, 1959, *13*, 106, 463; 1962, *16*, 101; 1965, *19*, 165, 206, 249; 1966, *20*, 421; 1967, *21*, 538; 1968, *22*, 463; 1969, *23*, 490; 1970, *24*, 526; 1971, *25*, 476.

RECOMMENDED INTERNATIONAL NONPROPRIETARY NAME (*Latin, English*)	CHEMICAL NAME OR DESCRIPTION AND MOLECULAR FORMULA
ciclacillinum ciclacillin	(1-aminocyclohexyl)penicillin *or* 6-(1-aminocyclohexanecarboxamido)-3,3-dimethyl-7-oxo-4-thia-1-azabicyclo[3.2.0]heptane-2-carboxylic acid $C_{15}H_{23}N_3O_4S$
cetiedilum cetiedil	α-cyclohexyl-3-thiopheneacetic acid, 2-(hexahydro-1*H*-azepin-1-yl)ethyl ester $C_{20}H_{31}NO_2S$
chymopapainum chymopapain	a proteolytic enzyme isolated from papaya latex; differs from papain only slightly in general behaviour, such as substrate specificity, activation, inhibition, etc.
ciclopiroxum ciclopirox	6-cyclohexyl-1-hydroxy-4-methyl-2(1*H*)-pyridone $C_{12}H_{17}NO_2$
ciltoprazinum ciltoprazine	1-(5-chloro-2-methoxybenzoyl)-3-[3-(4-*m*-tolyl-1-piperazinyl)propyl]urea $C_{29}H_{33}ClN_4O_3$
cinepazidum cinepazide	1-[(1-pyrrolidinylcarbonyl)methyl]-4-(3,4,5-trimethoxycinnamoyl)piperazine $C_{25}H_{31}N_3O_6$
citenazonum citenazone	5-formyl-2-thiophenecarbonitrile thiosemicarbazone $C_7H_6N_4S_2$
clobetasolum clobetasol	21-chloro-9-fluoro11β,17-dihydroxy-16β-methylpregna-1,4-diene-3,20-dione $C_{22}H_{28}ClFO_4$
clobetasonum clobetasone	21-chloro-9-fluoro-17-hydroxy-16β-methylpregna-1,4-diene-3,11,20-trione $C_{22}H_{26}ClFO_4$
clociguanilum clociguanil	4,6-diamino-1-[(3,4-dichlorobenzyl)oxy]-1,2-dihydro-2,2-dimethyl-*s*-triazine $C_{12}H_{15}Cl_2N_5O$
cloguanamilum cloguanamil	1-amidino-3-(3-chloro-4-cyanophenyl)urea $C_9H_8ClN_5O$
clometacinum clometacin	3-(*p*-chlorobenzoyl)-6-methoxy-2-methylindole-1-acetic acid $C_{19}H_{16}ClNO_4$
cotriptylinum cotriptyline	1-(dimethylamino)-3-(10,11-dihydro-5*H*-dibenzo[*a,d*]cycloheptен-5-ylidene)-2-propanone $C_{20}H_{21}NO$
coumazolinum coumazoline	2-[(2-ethylbenzofuran-3-yl)methyl]-2-imidazoline $C_{14}H_{16}N_2O$
dacarbazinum dacarbazine	5-(3,3-dimethyl-1-triazeno)imidazole-4-carboxamide $C_6H_{10}N_6O$
desonidum desonide	11β,16α,17,21-tetrahydroxypregna-1,4-diene–3,20-dione cyclic 16,17-acetal with acetone $C_{24}H_{32}O_6$
dexproxibutenum dexproxibutene	(+)-3-[(dimethylamino)methyl]-1,2-diphenyl-3-buten-2-ol propionate (ester) $C_{23}H_{27}NO_2$
difetarsonum difetarsone	*N,N*-ethylenediarsanilic acid $C_{14}H_{12}As_2N_2O_8$
dimetofrinum dimetofrine	4-hydroxy-3,5-dimethoxy-α[(methylamino)methyl]benzyl alcohol $C_{11}H_{17}NO_4$
dinoprostonum dinoprostone	7-[3-hydroxy-2-(3-hydroxy-1-octenyl)-5-oxocyclopentyl]-5-heptenoic acid or prostaglandin E_2 $C_{20}H_{32}O_5$
dinoprostum dinoprost	7-[3,5-dihydroxy-2-(3-hydroxy-1-octenyl)cyclopentyl]-5-heptenoic acid or prostaglandin $F_{2\alpha}$ $C_{20}H_{34}O_5$
doxibetasolum doxibetasol	9-fluoro-11β,17-dihydroxy-16β-methylpregna-1,4-diene-3,20-dione $C_{22}H_{29}FO_4$
droperidolum droperidol	1-[1-[3-(*p*-fluorobenzoyl)propyl]-1,2,3,6-tetrahydro-4-pyridyl]-2-benzimidazolinone $C_{22}H_{22}FN_3O_2$
duometacinum duometacin	3-(*p*-anisoyl)-6-methoxy-2-methylindole-1-acetic acid $C_{20}H_{19}NO_5$
econazolum econazole	1-[2,4-dichloro-β-[(*p*-chlorobenzyl)oxy]phenethyl]imidazole $C_{18}H_{15}Cl_3N_2O$
etocarlidum etocarlide	4,4′-diethoxythiocarbanilide $C_{17}H_{20}N_2O_2S$
exiprobenum exiproben	*o*-[3-(hexyloxy)-2-hydroxypropoxy]benzoic acid $C_{16}H_{24}O_5$
febuverinum febuverine	1,4-piperazinediethanol di(2-phenylbutyrate ester) $C_{36}H_{48}N_2O_4$
feclobuzonum feclobuzone	*p*-chlorobenzoic acid, ester with 4-butyl-4-(hydroxymethyl)-1,2-diphenyl-3,5-pyrazolidinedione $C_{27}H_{25}ClN_2O_4$
fenabutenum fenabutene	*p*-(1-methylpropenyl)phenyl acetate $C_{12}H_{14}O_2$
fenoterolum fenoterol	3,5-dihydroxy-α[[(*p*-hydroxy-α-methylphenethyl)amino]methyl]benzyl alcohol $C_{17}H_{21}NO_4$
fenoxedilum fenoxedil	2-(*p*-butoxyphenoxy)-*N*-(2,5-diethoxyphenyl)-*N*-[2-(diethylamino)ethyl]acetamide $C_{28}H_{42}N_2O_5$
fenpiverinii bromidum fenpiverinium bromide	1-(3-carbamoyl-3,3-diphenylpropyl)-1-methylpiperidinium bromide $C_{29}H_{35}BrN_2O$
ferropolimalerum ferropolimaler	maleic acid polymer with methyl vinyl ether, iron(2+) salt $(C_7H_8FeO_8)_n$
fluperamidum fluperamide	4-(4-chloro-α,α,α-trifluoro-*m*-tolyl)-4-hydroxy-*N,N*-dimethyl-α,α-diphenyl-1-piperidinebutyramide $C_{30}H_{32}ClF_3N_2O_2$
fosazepamum fosazepam	7-chloro-1-[(dimethylphosphinyl)methyl]-1,3-dihydro-5-phenyl-2*H*-1,4-benzodiazepin-2-one $C_{18}H_{18}ClN_2O_4P$
gitoformatum gitoformate	gitoxin 3′,3″,3‴,4‴,16-pentaformate; 3β-[2,6-dideoxy-β-D-*ribo*-hexopyranosyl-(1→4)-*O*-2,6-dideoxy-β-D-*ribo*-hexopyranosyl-(1→4)-2,6-dideoxy-β-D-*ribo*-hexopyranosyl)oxy]-14,16β-dihydroxy-5β-card-20(22)-enolide 3′,3″,3‴,4‴,16-pentaformate $C_{48}H_{64}O_{19}$
gramicidinum S gramicidin S	cyclo(L-valyl-L-ornithyl-L-leucyl-D-phenylalanyl-L-prolyl-L-valyl-L-ornithyl-L-leucyl-D-phenylalanyl-L-prolyl) $C_{60}H_{92}N_{12}O_{10}$
guanabenzum guanabenz	[(2,6-dichlorobenzylidene)amino]guanidine $C_8H_8Cl_2N_4$
guanazodinum guanazodine	[(octahydro-2-azocinyl)methl]guanidine $C_9H_{20}N_4$
ifenprodilum ifenprodil	4-benzyl-α-(*p*-hydroxyphenyl)-β-methyl-1-piperidineethanol $C_{21}H_{27}NO_2$
intriptylinum intriptyline	4-(5*H*-dibenzo[*a,d*]cycloheptен-5-ylidene)-*N,N*-dimethyl-2-butynylamine $C_{21}H_{19}N$
ketazolamum ketazolam	11-chloro-8,12b-dihydro-2,8-dimethyl-12b-phenyl-4*H*-[1,3]oxazino[3,2-*d*][1,4]benzodiazepine-4,7(6*H*)-dione $C_{20}H_{17}ClN_2O_3$
lapirii chloridum lapirium chloride	1-[[(2-hydroxyethyl)carbamoyl]methyl]pyridinium chloride laurate (ester) $C_{21}H_{39}ClN_2O_3$
lenperonum lenperone	4′-fluoro-4-[4-(*p*-fluorobenzoyl)piperidino]butyrophenone $C_{32}H_{32}F_2NO_3$

RECOMMENDED INTERNATIONAL NONPROPRIETARY NAME (*Latin, English*)	CHEMICAL NAME OR DESCRIPTION AND MOLECULAR FORMULA
levacetylmethadolum levacetylmethadol	(—)-3-acetoxy-6-dimethylamino-4,4-diphenylheptane $C_{23}H_{31}NO_2$
lomustinum lomustine	1-(2-chloroethyl)-3-cyclohexyl-1-nitrosourea $C_9H_{16}ClN_3O_2$
loperamidum loperamide	4-(*p*-chlorophenyl)-4-hydroxy-*N*,*N*-dimethyl-α,α-diphenyl-1-piperidinebutyramide $C_{29}H_{33}ClN_2O_2$
lotucainum lotucaine	2,2,5,5-tetramethyl-α-[(o-tolyloxy)methyl]-1-pyrrolidineethanol $C_{18}H_{29}NO_2$
mepramidilum mepramidil	3,4,5-trimethoxybenzoic acid,3-[(3,3-diphenylpropyl)amino]propyl ester $C_{29}H_{33}NO_5$
metipiroxum metipirox	1-hydroxy-4,6-dimethyl-2(1*H*)-pyridone $C_7H_9NO_2$
metrizamidum metrizamide	2-[3-acetamido-2,4,6-triiodo-5-(*N*-methylacetamido)benzamido]-2-deoxy-D-glucose $C_{18}H_{23}I_3N_3O_8$
metynodiolum metynodiol	11β-methyl-19-nor-17α-pregn-4-en-20-yne-3β,17-diol $C_{21}H_{30}O_2$
miboleronum mibolerone	17β-hydroxy-7α,17-dimethylester-4-en-3-one $C_{20}H_{30}O_2$
mitolactolum mitolactol	1,6-dibromo-1,6-dideoxy-D-galactitol $C_6H_{12}Br_2O_4$
molsidominum molsidomine	*N*-carboxy-3-morpholinosydnone imine ethyl ester $C_9H_{14}N_4O_4$
morsuximidum morsuximide	2-methyl-*N*-(morpholinomethyl)-2-phenylsuccinimide $C_{16}H_{20}N_2O_3$
moxipraquinum moxipraquine	4-[6-[(6-methoxy-8-quinolyl)amino]hexyl]-α-methyl-1-piperazinepropanol $C_{24}H_{36}N_4O_3$
nicergolinum nicergoline	10-methoxy-1,6-dimethylergoline-8β-methanol 5-bromonicotinate (ester) $C_{24}H_{26}BrN_3O_3$
nifedipinum nifedipine	1,4-dihydro-2,6-dimethyl-4-(o-nitrophenyl)-3,5-pyridinedicarboxylic acid, dimethyl ester $C_{17}H_{18}N_2O_6$
nimetazepamum nimetazepam	1,3-dihydro-1-methyl-7-nitro-5-phenyl-2*H*-1,4-benzodiazepin-2-one $C_{16}H_{13}N_3O_3$
nimorazolum nimorazole	4-[2-(5-nitroimidazol-1-yl)ethyl]morpholine $C_9H_{14}N_4O_3$
orazamidum orazamide	5-aminoimidazole-4-carboxamide orotate $C_6H_9N_4O \cdot C_6H_4N_2O_4 \cdot 2H_2O$ or $C_9H_{10}N_6O_8 \cdot 2H_2O$
osmadizonum osmadizone	[2-(phenylsulfinyl)ethyl]malonic acid mono(1,2-diphenylhydrazide) $C_{25}H_{24}N_2O_4S$
panidazolum panidazole	4-[2-(2-methyl-5-nitroimidazol-1-yl)ethyl]pyridine $C_{11}H_{12}N_4O_2$
pentapiperii metilsulfas pentapiperium metilsulfate	4-hydroxy-1,1-dimethylpiperidinium methyl sulfate 3-methyl-2-phenylvalerate ester $C_{26}H_{39}NO_6S$
picoperinum picoperine	1-[2-[*N*-(2-pyridylmethyl)anilino]ethyl]piperidine $C_{19}H_{25}N_3$
polidocanolum polidocanol	polyethylene glycol monododecyl ether (average polymer, n=9; nonaethylene glycol monododecyl ether)
poloxamerum 331 poloxamer 331	α-hydro-ω-hydroxypoly(oxyethylene)poly(oxypropylene) (53–59 moles)poly(oxyethylene) block copolymer average molecular weight: 3,800
poloxamerum 407 poloxamer 407	α-hydro-ω-hydroxypoly(oxyethylene)poly(oxypropylene) (63–71 moles)poly(oxyethylene) block copolymer average molecular weight: 12,500
pretiadilum pretiadil	6,11-dihydro-6-methyl-11-[3-[methyl(α-methylphenethyl)amino]propyl]dibenzo-[1,2,5]thiadiazepine 5,5-dioxide $C_{26}H_{31}N_3O_2S$
quindoxinum quindoxin	quinoxaline 1,4-dioxide $C_8H_6N_2O_2$
ribostamycinum ribostamycin	*O*-2,6-diamino-2,6-dideoxy-α-D-glucopyranosyl-(1→4)-*O*-[β-D-ribofuranosyl-(1→5)]-2-deoxystreptamine $C_{17}H_{34}N_4O_{10}$
rimazolii metilsulfas rimazolium metilsulfate	3-(ethoxycarbonyl)-6,7,8,9-tetrahydro-1,6-dimethyl-4-oxo-4*H*-pyrido[1,2-α]pyrimidinium methyl sulfate $C_{14}H_{22}N_2O_7S$
rimiterolum rimiterol	α-(3,4-dihydroxyphenyl)-2-piperidinemethanol $C_{12}H_{17}NO_3$
ruvazonum ruvazone	o-ethoxybenzoic acid (1-carboxyethylidene)hydrazide $C_{12}H_{14}N_2O_4$
semustinum semustine	1-(2-chloroethyl)-3-(4-methylcyclohexyl)-1-nitrosourea $C_{10}H_{18}ClN_3O_2$
sopitazinum sopitazine	10-[(4-isopropyl-1-piperazinyl)carbonyl]phenothiazine $C_{20}H_{23}N_3OS$
sudoxicamum sudoxicam	4-hydroxy-2-methyl-*N*-2-thiazolyl-2*H*-1,2-benzothiazine-3-carboxamide 1,1-dioxide $C_{12}H_{11}N_3O_4S_2$
sulbenicillinum sulbenicillin	3,3-dimethyl-7-oxo-6-(2-phenyl-2-sulfoacetamido)-4-thia-1-azabicyclo[3.2.0]heptane-2-carboxylic acid $C_{16}H_{18}N_2O_7S_2$
sulfabenzamidum sulfabenzamide	*N*¹-benzoylsulfanilamide $C_{19}H_{16}N_2O_3S$
sultopridum sultopride	*N*-[(1-ethyl-2-pyrrolidinyl)methyl]-5-(ethylsulfonyl)-o-anisamide $C_{17}H_{28}N_2O_4S$
talsupramum talsupram	1,3-dihydro-*N*,3,3-trimethyl-1-phenylbenzo(c)thiophene-1-propylamine $C_{20}H_{25}NS$
taurultamum taurultam	tetrahydro-2*H*-1,2,4-thiadiazine 1,1-dioxide $C_3H_8N_2O_2S$
thyroglobulinum thyroglobulin	thyroglobulin is a substance obtained by the fractionation of thyroid glands from the hog, *Sus scrofa* Linné var. *domesticus* Gray (Fam. *Suidae*), containing not less than 0.7 percent of total iodine (I)
tiaramidum tiaramide	4-[(5-chloro-2-oxo-3-benzothiazolinyl)acetyl]-1-piperazine ethanol $C_{15}H_{18}ClN_3O_3S$
tofisopamum tofisopam	1-(3,4-dimethoxyphenyl)-5-ethyl-7,8-dimethoxy-4-methyl-5*H*-2,3-benzodiazepine $C_{22}H_{28}N_2O_4$
toldimfosum toldimfos	[4-(dimethylamino)-o-tolyl]phosphinic acid $C_9H_{14}NO_2P$

tralonidum tralonide	9,11β-dichloro-6α,21-difluoro-16α,17-dihydroxypregna-1,4-diene-3,20-dione cyclic acetal with acetone $C_{24}H_{28}Cl_2F_2O_4$
trazitilinum trazitiline	1-(9,10-dihydro-9,10-ethano-9-anthryl)-4-methylpiperazine $C_{21}H_{26}N_2$
treosulfanum treosulfan	L-threitol 1,4-dimethanesulfonate $C_6H_{14}O_8S_2$
urapidilum urapidil	6-[[3-[4-(*o*-methoxyphenyl)-1-piperazinyl]propyl]amino]-1,3-dimethyluracil $C_{20}H_{29}N_5O_3$
zepastinum zepastine	6,11-dihydro-6-methyl-11-(1αH,5αH-tropan-3α-yloxy)dibenzo[*c,f*][1,2]thiazepine 5,5-dioxide $C_{24}H_{28}N_2O_3S$
zipeprolum zipeprol	α-(α-methoxybenzyl)-4-(β-methoxyphenethyl)-1-piperazineethanol $C_{24}H_{32}N_2O_3$

AMENDMENTS TO PREVIOUS LISTS

Vol. 16, No. 3

RECOMMENDED INTERNATIONAL NONPROPRIETARY NAMES (*Rec. I.N.N.*): LIST 4

p. 108 : paromomycinum paromomycin	*replace description by the following:* *O*-2,6-diamino-2,6-dideoxy-β-L-idopyranosyl-(1→3)-*O*-β-D-ribofuranosyl-(1→5)-*O*-[2-amino-2-deoxy-α-D-glucopyranosyl-(1→4)]-2-deoxystreptamine $C_{23}H_{45}N_5O_{14}$

Errata

All reference to Patent No. 3,712,975 to Joseph B. Allen et al., Line Segment Intersection Test, appearing in the OFFICIAL GAZETTE of Jan. 23, 1973, should be deleted as the application inadvertently issued.

All reference to Patent No. 3,713,172 to Peter Senak, Jr., Method of Minimizing Error in Incremental Whole Unit Positioning From Data Having Fractional Units, appearing in the OFFICIAL GAZETTE of Jan. 23, 1973, should be deleted as the application inadvertently issued.

All reference to Patent No. 3,713,173 to Eugene Allen et al., Method of Color Matching With More Than Three Components, appearing in the OFFICIAL GAZETTE of Jan. 23, 1973, should be deleted as the application inadvertently issued.

All reference to Patent No. 3,714,667 to Edwin Ira Stearns, Evaluation of Matches in Computer Color Matching, appearing in the OFFICIAL GAZETTE of Jan. 30, 1973, should be deleted as the application inadvertently issued.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 6, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	12-16-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-12-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-18-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	10-13-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-01-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	6-14-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-31-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-03-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	10-27-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-27-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	5-04-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-01-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	1-03-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	3-03-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-06-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	10-26-71

Expiration of patents: The patents within the range of numbers indicated below expire during February 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,733,439 to 2,736,897, inclusive
Plant Patents..... Number 1,456

REISSUES

FEBRUARY 27, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,585

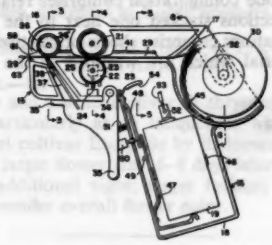
DEVICES FOR DISPENSING TINSEL AND THE LIKE ADAPTABLE FOR DECORATING CHRISTMAS TREES

John Postolowski, 45—12 163rd St., Flushing, N.Y. 11358

Original No. 3,494,235, dated Feb. 10, 1970, Ser. No. 711,603, Mar. 8, 1968. Application for reissue Sept. 23, 1971, Ser. No. 183,095

Int. Cl. B26d *5/20*

U.S. Cl. 83—225 9 Claims



Upon the pressing of a spring-biased element which may be the trigger of a gun-shape, tinsel issues through the muzzle from off a supply roll mounted at the stock. The upper part of the barrel of the gun is movable to allow the tinsel to be threaded by being laid in a track which keeps it from getting caught in its passage to discharge end and also guide the cut-off blade. The stock houses a dry cell to power a miniature electric motor driving nippling rollers. The trigger controls a switch in the motor circuit. Near muzzle end, there is an idler roller which is normally engaged by the cut-off blade carried by the trigger. At cut off, said blade automatically shifts said idler to free the new lead end of the tinsel.

27,586

APPARATUS FOR FORMING CERAMIC SHELL MOLDS

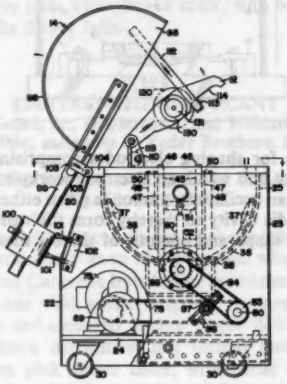
Claude H. Watts, Mayfield Heights, and Floyd D. Benthimer, Warrensville Heights, Ohio, assignors to Precision Metalsmiths, Inc.

Original No. 3,590,905, dated July 6, 1971, Ser. No. 719,575, Apr. 8, 1968. Application for reissue Nov. 15, 1971, Ser. No. 198,620

Int. Cl. B22c *13/08*

U.S. Cl. 164—165 16 Claims

Apparatus for use in forming ceramic shell molds including a slurry tank, a pair of pivoted arms adapted to support a pattern setup for rotation about a horizontal axis and to lower the setup into the tank for the application of a slurry coating, and a cover adapted to close and seal the tank, whereby a vacuum can be produced therein during application of the slurry coating.



27,587

TREATING VEHICLE FOR POLYESTER FILAMENTARY MATERIAL AND METHOD OF IMPROVING THE PROPERTIES OF SUCH MATERIAL

Paul Paliyenko and Herbert Wright Coates, Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Original No. 3,251,794, dated May 17, 1966, Ser. No. 209,772, July 13, 1962, which is a continuation of Ser. No. 741,820, May 16, 1968. Application for reissue May 22, 1970, Ser. No. 41,679

Int. Cl. C08g *47/10, 51/24*

U.S. Cl. 260—29.2 M 10 Claims

Polyester filamentary materials and particularly filling material adapted for use in pillows, paddings, comforters and the like, having improved crimp characteristics, high resilience and high bulk, said filamentary material having been treated with an aqueous emulsion of silicone resin, a curing catalyst therefor, and an antistatic agent, preferably a quaternary ammonium salt.

27,588

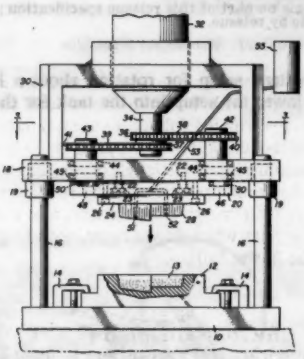
APPARATUS FOR SHAPING ELECTRODES

Elmer P. Hausermann, 301 S. Kenilworth, Bensenville, Ill. 60126

Original No. 3,465,480, dated Sept. 9, 1969, Ser. No. 622,532, Mar. 13, 1967. Application for reissue Dec. 14, 1970, Ser. No. 98,218

Int. Cl. B24b 19/00

U.S. Cl. 51—157 10 Claims



Apparatus for shaping electrodes comprising an abrasive die cavity into which an electrode workpiece is forced and wherein an oscillatory motion is given either the workpiece or the die cavity to thereby form the workpiece into the identical shape and contour of the die member.

27,589

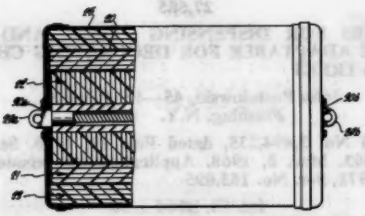
BOAT FENDER STRUCTURES

Duff L. Dean, deceased, late of North Hollywood, Calif., by Jean C. Dean, executrix, Palo Alto, Calif., and Karl E. Balliet, Bedford, Va., assignors to Triple D Industries, Inc., Burbank, Calif.

Original No. 3,455,269, dated July 15, 1969, Ser. No. 732,481, Apr. 26, 1968, which is a continuation-in-part of Ser. No. 596,892, Nov. 25, 1966. Application for reissue June 11, 1971, Ser. No. 152,119

Int. Cl. B63b 21/00

U.S. Cl. 114—219 5 Claims



A boat fender structure having several different bagged configurations of buoyant material one inside of the other. The inside configuration comprises relatively rigid, disc-shaped sections stacked one next to the other. The outer configurations comprise sheets of relatively resilient, buoyant material which are wrapped in the form of a spiral.

PLANT PATENTS

GRANTED FEBRUARY 27, 1973

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,310

MILKWEED PLANT

Barnell L. Cobia, 135 Temple Grove Drive, Winter Garden, Fla. 32787

Filed May 18, 1971, Ser. No. 144,693
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—88 **1 Claim**

A new and distinct plant variety of the milkweed family is structurally closely similar in appearance to plant specimens of the *Hoya carnosa compacta* variety but is distinguished from the latter variety by characteristic leaf blade border variegations.

3,311

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed June 15, 1971, Ser. No. 153,455
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—80 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to uniqueness when compared to the parent cultivar Escapade by its looser, less incured petal form; larger flower size; 6–9 days later response and 6–10 inch additional vigor; larger foliage; and its more generally lavender overall flower color.

3,312

IRIS PLANT

Carl G. Klehm, 2 E. Algonquin Road, Arlington Heights, Ill. 60005

Filed June 23, 1971, Ser. No. 156,139
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of iris plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a vigorous habit of growth, with large rhizomes and strong, stiff stems, distinctive rippled foliage, extremely large flowers, with little or no crinkling or rippling anywhere on the blossoms, outstanding "plasticity" of the flowers (flower falls hold a horizontal position during weathering) which contributes to their massive appearance, and a distinctive and attractive pure white flower color, with bright golden beards on the flower falls.

3,313

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed June 15, 1971, Ser. No. 153,457
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—80 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the cultivar Caravelle by a longer recommended flowering period, one week earlier response, approximately one inch to one-and-a-quarter inches larger flower, a flatter petal and more decorative, less formal flower form, a more salmon pink flower color, with better color retention, approximately 4" more vigor, lighter color and more coarse foliage, more prominent stipules, and less prominent veins in the leaves; and characterized particularly as to its uniqueness when compared to the cultivar Telstar by a flower approximately ¾" smaller at maturity, less reflexing of the petals as the flower matures, more salmon pink coloration, approximately 1" more vigor, foliage which is lighter in color and smaller, and smaller stipules.

PATENTS

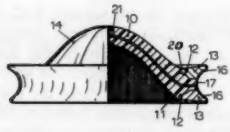
GRANTED FEBRUARY 27, 1973

GENERAL AND MECHANICAL

3,717,882
CAP WITH ADJUSTABLE FACE MASK
Walter E. Schuessler, 800 Red Bud Lane, Wilmette, Ill.
Filed April 29, 1971, Ser. No. 138,690
Int. Cl. A42b *1/06*
U.S. Cl. 2—173 **5 Claims**

A cap formed of stretchable knitted material and having a face mask portion with a single eye opening. The eye opening may be enlarged by stretching of the material to expose the entire lower face portion of the wearer. Releasable fastening means are provided at mid points along the upper and lower edges of the opening so that when maximum protection against the weather is desired, the fasteners may be connected to bring the fabric completely over the wearer's nose and expose only his eyes.

3,717,883
CARDIAC VALVE REPLACEMENT
Fred D. Mosher, Erie, Pa., assignor to Techno Corporation, Erie, Pa.
Continuation-in-part of Ser. No. 769,932, Oct. 23, 1968, abandoned. This application Nov. 23, 1970, Ser. No. 91,950
Int. Cl. A61f *1/22*; **F16k** *15/16, 17/04*
U.S. Cl. 3—1 **2 Claims**

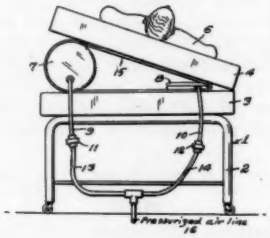


A valve suitable for cardiac surgery to replace a diseased valve. The valve is made of a molded material which will be compatible with the human body. The valve has a generally hemispherical shape with annular grooves around its base. Rings are disposed in the grooves which merge with the base to define a concave peripheral groove. The concave groove is provided so that a soft fibrous material may be secured thereto allowing the entire assembly to be sutured in a flexible conduit such as a vein or a principal artery. The hemispherical part of the valve is divided into petals which will spread like the sections of an orange peel when fluid force is exerted in one direction. The petals will close when a force is exerted in the opposite direction.

3,717,884
SEAT LIFTER
Charles P. Mantooth, 2011 Magnolia Ave. N.E., Knoxville, Tenn.
Filed Aug. 27, 1971, Ser. No. 175,641
Int. Cl. A47k *13/00*
U.S. Cl. 4—237 **4 Claims**

A lifting handle for a toilet seat, consisting of a plate-like flange which can be fastened to the underside of a toilet seat by screws, with a laterally projecting hand grip having tom and bottom ribs in the form of closed loops. The bottom rib depends adjacent the toilet seat so as to act as a splash deflector.

3,717,885
CLINICAL MANIPULATOR
Baltzar Leo De Mare, 627 W. Belair Ave., Aberdeen, Md. 21001
Filed May 24, 1971, Ser. No. 146,389
Int. Cl. A61g *1/02, 7/10*
U.S. Cl. 5—61 **3 Claims**



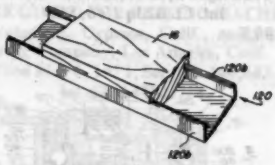
A clinical manipulator for tilting the body of a bed patient around the long axis of the body to facilitate washing, applying dressings, massaging and to prevent formation of bed sores. A pair of inflatable, elongated bags are placed, one each, between the underside of the mattress and the top of the bed springs and disposed adjacent the sides thereof. The bags are connected to a source of pressurized air. By alternately inflating and deflating the bags, the mattress is tilted from side to side with the patient.

3,717,886

BOX SPRING FRAME

Edwin B. Watts, Rosemont, Ill., assignor to Sealy, Inc., Chicago, Ill.

Filed Feb. 25, 1971, Ser. No. 118,631
Int. Cl. A47c *15/30*
U.S. Cl. 5—239 6 Claims



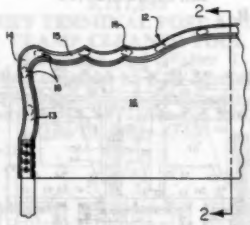
A box spring frame for supporting a mattress used in conjunction with the frame. The box spring frame includes frame means that define an outer perimeter of the box spring frame. The frame means has a plurality of slat members extending therebetween that are each formed to have a top face and a bottom face. A cap member is positioned contiguous to the bottom face of each slat member. The slat members and the cap members are constructed of materials that are lightweight and have strong compression and tensile strengths, respectively. Accordingly, to utilize the strongest characteristics of the slat members and the cap members they are positioned within the frame so that a major portion of the cross-sectional area of each slat member is placed into compression and each cap member is placed in tension when a load is placed on the frame.

3,717,887

UNITARY PLASTIC BED FRAME

Charles H. Thomas, 310 Woodsway Lane, Lenoir, N.C.

Continuation-in-part of Ser. No. 872,105, Oct. 29, 1969, abandoned. This application Aug. 20, 1970, Ser. No. 65,730
Int. Cl. A47c *19/00*
U.S. Cl. 5—280 9 Claims



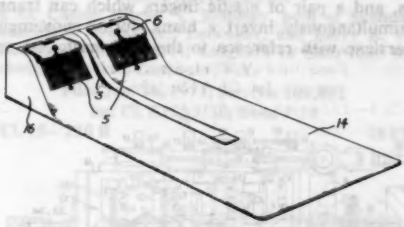
A plastic end member for beds having the appearance of being wooden, and molded as an integral frame with the outer surface having a wood-grain finish. In an alternate embodiment, the rear surface of the frame is formed in one of two prescribed configurations in order to attach either a solid panel or a series of splats across the width thereof. The invention further includes a unique type of mold for the alternative embodiments in which a single face die is used with either of two rear dies to form the prescribed rear configuration of the frame.

3,717,888

SLEEPING BAG

David P. Phelan, 3402 S.E. Main, Portland, Oreg.

Filed Nov. 2, 1970, Ser. No. 86,258
Int. Cl. A47g *9/00*
U.S. Cl. 5—343 5 Claims



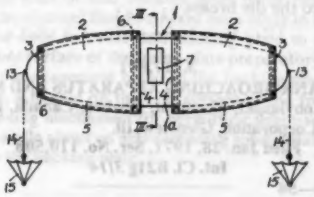
A device for enveloping a sleeper to provide him with protective covering comprising an envelope having an elongated top panel closing off the top of the envelope. A zipper closed slot in the top panel is openable to provide entry into the device. Inflatable bladder structure when inflated functions to hold the top panel at the head end of the envelope elevated from the base of the envelope. Net covered windows provide for the admission of air to the interior of the envelope, and such are opened and closed by flaps which may be manipulated by cords which extend into the interior of the envelope.

3,717,889

LIFE-BOATS

Peer Hvoslef, Monolittveien 16, Oslo, Norway

Filed July 27, 1971, Ser. No. 166,492
Int. Cl. B63c *906*
U.S. Cl. 9—4 5 Claims



A life-boat having a closed smooth hull of circular cross-section and substantially elliptical longitudinal section, wherein the front and rear part of the hull are each surrounded by a freely rotatably mounted shell extending from the respective end of the hull towards the middle thereof, said shells having such a length that between the opposed inner ends thereof there is an intermediate exposed circumferential part of the hull suitable for the provision of the light and access to the hull.

3,717,890

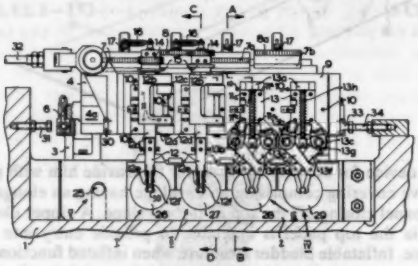
TRANSFER MECHANISM FOR MULTISTAGE MACHINE TOOLS

Alois Weller, Dusseldorf, Germany, assignor to Malmedie & Co. Maschinenfabrik GmbH, Dusseldorf, Germany

Filed Nov. 5, 1971, Ser. No. 196,137
Claims priority, application Germany, Nov. 7, 1970, P 20 54 820.3
Int. Cl. B21k *1/44, 1/58, 1/64*
U.S. Cl. 10—12 T 10 Claims

A multistage press for the production of metallic nuts, bolts or the like has a die breast with a horizontal row of work stations and a carriage which is reciprocable

along the die breast through distances corresponding to that between two neighboring work stations. The frame of the press supports a gear segment and a coaxial cam for each work station. A transfer device of a first type can be attached to the carriage for each work station or for one or more selected work stations, and such transfer device employs a shaft which carries a follower tracking one of the cams, a gear meshing with one of the gear segments, and a pair of elastic fingers which can transport and simultaneously invert a blank during movement of the carriage with reference to the die breast. A transfer



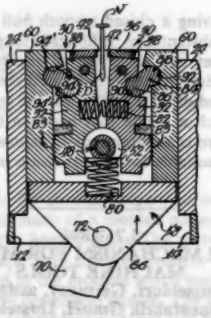
device of a second type can be attached to the carriage for each work station or for one or more selected work stations in addition to or as a substitute for a transfer device of the first type. Each transfer device of the second type has a pair of jaws which can be moved between open and closed positions by a rotary cam provided in the machine frame. The gear and the follower on the shaft of each transfer device of the first type can be replaced by a retainer which holds the shaft against rotation and also prevents the shaft from pivoting about an axis which is parallel to its own axis when the carriage moves with reference to the die breast.

3,717,891

NAIL SHANK BROACHING APPARATUS AND METHOD

Anthony Kobylanski, Montreal, Quebec, Canada, assignor to Signode Corporation, Glenview, Ill.

Filed Jan. 28, 1971, Ser. No. 110,508
Int. Cl. B21g *3/14*
U.S. Cl. 10—54 **3 Claims**



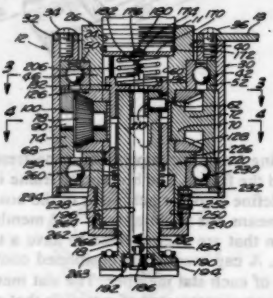
A method of, and a device for broaching nail shanks. Pairs of nails having distended shank portions near their points are positioned between pairs of spaced apart broaching surfaces, which surfaces are then closed to contact the shanks above the distended portions. Then the surfaces are moved downwardly along the shanks to reshape the distended portions. The nails are moved into broaching position transversely of their axes, and are supported adjacent their heads against axial movement during the broaching operation.

3,717,892

TAPPING ATTACHMENT FOR NUMERICAL CONTROL

Allan S. Johnson, Costa Mesa, Calif., assignor to Tapmatic Corporation

Filed April 9, 1970, Ser. No. 26,894
Int. Cl. B23q *1/46, 5/14*
U.S. Cl. 10—89 F **10 Claims**



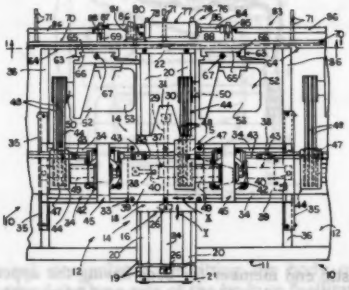
The invention is a tapping attachment of the type having free axial float. Direct and reverse drive is provided for by way of planetary gears for driving at the same speed in direct and reverse drive. An adjustment is provided for the magnitude of the free axial float. Spring biased clutch driver members are provided for both the direct and reverse drive providing a narrow, neutral position which cooperates with the adjustment of the free axial float. The attachment accommodates itself in a number of ways to numerical or computer control.

3,717,893

AUTOMATIC TAPE-CONTROLLED WORK FINISHING MACHINE

George R. Carlson, 830 Cranbrook Road, Birmingham, Mich.

Filed Sept. 11, 1970, Ser. No. 71,445
Int. Cl. B24b *29/00*
U.S. Cl. 15—97 R **3 Claims**



A multiple head buffing machine featuring a plurality of like work holders and a like number of motor-driven buffing wheels thereabove has these wheels coupled for simultaneous identical tilting action in operating on work pieces on the holders. The latter are carried for side-to-side and front-to-rear indexing motions, or equivalent compound motions in polish-

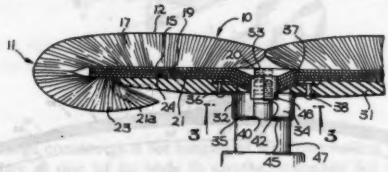
ing, by a dual carriage assembly; and the universal movements of motorized finishing wheels and carriage-borne work holders, as directly powered by electrical and/or hydraulic motor means of one sort or another, are under the sole and master automatic control of a magnetic tape or equivalent tape or card type programming and feed-back system, which forwards "on-off," rate timing or equivalent signals to such motor means.

3,717,894

EDGE GUARD FOR BUFFING MACHINE

Orval W. Wakefield, Cypress, Calif., assignor to Pit-Bar Manufacturing Company, Los Angeles, Calif.

Filed May 6, 1971, Ser. No. 140,683
Int. Cl. A47l *11/14*
U.S. Cl. 15—97 R 4 Claims



The present invention discloses an edge guard for a buffer pad. The buffed pad is formed of a canvas backing provided with a nap of wool on the front working surface thereof. The edge guard is similarly formed of a canvas backing with a wool nap, but the nap therefor is on the back surface of the canvas backing and only extends about an annular area adjacent to the outer circumference thereof. During the assembly of the buffer pad on a circular rubber back-up disc that is used for holding the buffer pad on the projecting end of a driving spindle, the edge guard pad is first positioned on the back-up disc with the back surface of its canvas backing against the back-up disc such that the annular area provided with the nap of wool surrounds and extends beyond the outer circumferential edge of the back-up disc. Then the buffer pad is positioned on the back-up disc with the back surface of its canvas backing against the front surface of the edge guard pad. The assembly is then fastened together by a clamping nut.

3,717,895

BATTERY TERMINAL POST AND POST CLAMP CLEANER TOOL

Frederick R. McFarland and Walter L. Diffenderfer, Lancaster, Pa., assignors to K-D Manufacturing Company, Lancaster, Pa.

Filed Mar. 19, 1971, Ser. No. 126,056
Int. Cl. H01r *43/00*
U.S. Cl. 15—105 8 Claims

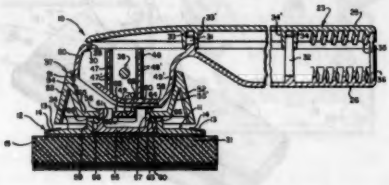
Battery post and battery post clamp cleaning tools comprise, in their operative portions, wound sheet spring steel with axially disposed lips projecting inwardly and outwardly respectively. The inwardly projecting lip conforms in shape to the outer surface of the battery post while the outwardly projecting lip conforms to the surface shape of the post hole in the battery clamp.

3,717,896

PAINT APPLICATOR

David O. Chase; Martin V. Maloney, both of Skaneateles; Frederick J. Wood, Jr., Lancaster, and Barry B. Wood, Williamsville, all of N.Y., assignors to Shur-Line Manufacturing Co., Inc., Lancaster, N.Y.

Filed Jan. 26, 1971, Ser. No. 109,891
Int. Cl. B25g *3/38*; B44d *3/28*
U.S. Cl. 15—210 R 15 Claims



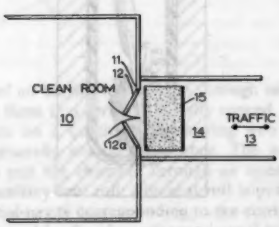
A paint applicator including a frame plate of generally rectangular configuration having a front surface and a rear surface and side edges which are tapered proximate their ends, a flexible backing plate proximate said front surface for mounting an absorbent pad, substantially parallel channel flanges on said backing plate fro engaging the central portion of said side edges of said frame plate in complementary mating engagement, lugs extending outwardly from said front surface of said frame plate for bracketing the ends of said backing plate to thereby prevent the backing plate from shifting from its position on the frame plate, disengagement between said lugs and the ends of said backing plate being permitted by squeezing the channel flanges toward each other in the area of said tapered ends to cause said backing plate to bow away from the front surface of the frame plate preparatory to effecting sliding disengagement between the backing plate and the frame plate, a handle on the rear surface of the frame plate, and an indexing mechanism for permitting selective positioning of the handle about an axis extending substantially perpendicularly to the backing plate.

3,717,897

TACKY FLOOR PAD

Homer C. Amos, 1086 Marshall Way, and Edward T. Strickland, 171 Luring Drive, Palm Springs, both of Calif.

Filed June 18, 1970, Ser. No. 47,453
Int. Cl. A47l *23/22*
U.S. Cl. 15—215 10 Claims



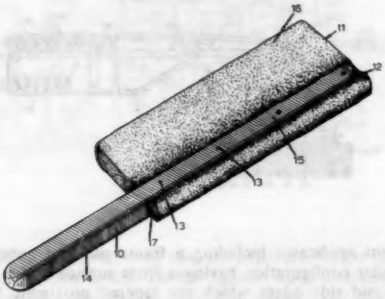
At an entrance doorway leading into a clean room is a pad for cleaning shoes and wheels. The pad is substantially as wide as said doorway and longer than a large step taken by a person

walking, and it is adhesively adhered to the passageway floor in front of the doorway. The pad has a thin base material and a thin water-washable adhesive covering its upper surface for removing dirt and other foreign matter from shoes and wheels. The adhesive presents a fairly high temporary tack for grabbing dirt aggressively and firmly, yet releasing it readily when washed.

3,717,898
FOAM BRUSH

Kermith W. Jones, 116½ William St., Jamestown, N.Y.

Filed Nov. 9, 1970, Ser. No. 87,683
Int. Cl. A47l *1/10, 13/46*
U.S. Cl. 15—244 R 1 Claim

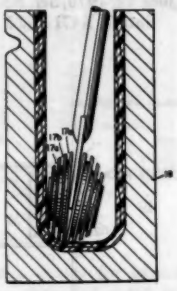


A brush for dusting and for removing snow from automotive windshields and the like made up of a rigid handle having a slot cut in one end and a rectangular block of relatively flexible closed cell foam disposed in the slot with rivets holding the foam in clamped relationship in the slot. The foam material extends from one side of the handle several inches so that it can be used to get into recesses in windshields and similar places.

3,717,899
RESIN RADIUS ROLLER

Charles R. Gardner, Glendale, and Jay Johnson, La Canada, both of Calif., assignors to Republic Corporation, Century City, Calif.

Filed Dec. 17, 1970, Ser. No. 99,209
Int. Cl. B29d *9/02*
U.S. Cl. 15—230.11 14 Claims

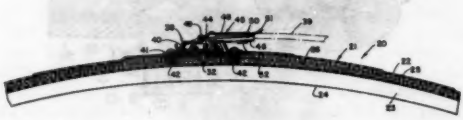


A resin radius roller for use in connection with resin impregnated fibrous materials which includes a shaft having a handle at one end and an axle, perpendicularly arranged, at the other end, and wheels having circular fins rotatably mounted on the axle on either side of the shaft, said fins decreasing in diameter as their distance from said shaft increases, said wheels being free to move laterally as well as with a rocking motion. The resin radius roller can be used in the corner of a mold to work air bubbles out of resinous materials without in any way catching or snagging the material being rolled.

3,717,900
WINDSHIELD WIPER ASSEMBLY

William J. Quinlan, and Lawrence L. Huver, both of Hastings, Mich., assignors to Hastings Manufacturing Company, Hastings, Mich.

Filed Nov. 19, 1970, Ser. No. 90,987
Int. Cl. B60s *1/38*
U.S. Cl. 15—250.36 17 Claims

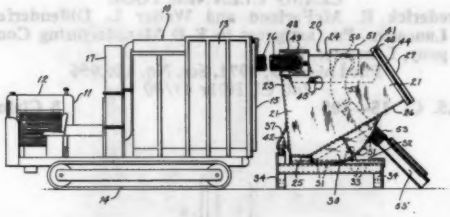


An elongated and longitudinally curved blade body of resiliently flexible material has a hollow crown portion integral with a lower wiping portion. A set of superposed metallic leaf springs are contained within the hollow crown portion of the blade body. Various types of wiper arm connectors may be secured to the blade body by fasteners which engage the leaf springs in the crown portion.

3,717,901
REFUSE HOPPERS

Duncan Johnstone, Lannon, Wis., assignor to DP Way Corporation, Milwaukee, Wis.

Filed Mar. 25, 1971, Ser. No. 128,014
Int. Cl. A47l *9/10*
U.S. Cl. 15—314 6 Claims



A refuse hopper that can be positioned at a convenient location in a foundry or factory and separably sealingly connected to a mobile vacuum cleaning machine, said hopper being designed to have refuse drawn into and deposited therein instead of said refuse being sucked directly into the cleaning machine. Thus when said hopper is filled it can be detached and hauled away to a remote dumping area while said cleaning machine is connected to another strategically placed hopper, thereby permitting

the continuous utilization of said vacuum cleaning machine without requiring frequent interruptions in order to transport said machine to a remote location for dumping.

3,717,902
HINGE CONSTRUCTION

Franciscus Gerhardus Savenije, Deventer, Netherlands, assignor to Auping N.V., Deventer, the Netherlands

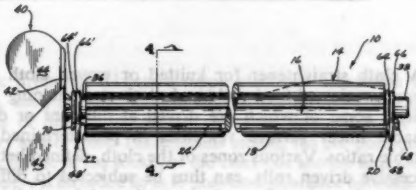
Filed July 16, 1970, Ser. No. 55,483
Int. Cl. E05d *1/06*
U.S. Cl. 16—171 4 Claims

A hinge construction for hinging at least one hollow tubular member at one of its ends to another member for relative swinging through less than 90°, comprises a first small block having flat side secured to that other member and a second small block fitting tightly in the end of the hollow member and having a thinner part with a flat side projecting beyond the hollow member. Both flat sides lie opposite each other and one has a projection fitting slidingly in a semicircular groove in the other flat side and a retaining element maintaining the thin part of the second block against the flat side of the first block. A limiting element limits the angle of relative swinging movement.

3,717,903
HAND OPERATED FISH SKINNING TOOL

Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed Nov. 9, 1970, Ser. No. 87,819
Int. Cl. A22c *25/17*
U.S. Cl. 17—67 6 Claims

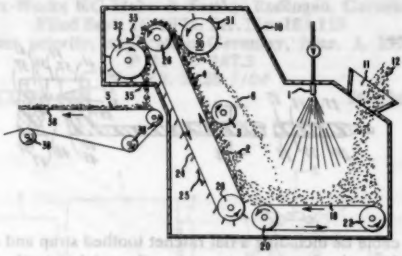


A hand operated fish skinning tool comprising a support means having a curved pressure surface formed thereon with a handle means extending rearwardly therefrom at one end thereof. A toothed roller is rotatably mounted on the support means so that the curved pressure surface partially extends around the roller. An actuating element is connected to one end of the roller for actuating the same so that the actuating element is positioned at one end of the support means and the handle means is positioned at the other end of the support means. A pair of spring clips embrace shaft stubs extending from opposite ends of the roller and are connected to opposite ends of the support means to yieldably urge the toothed roller into engagement with the curved pressure surface.

3,717,904
PROCESS OF FORMING A UNIFORM BATT FROM STAPLE FIBERS

Willard H. Bonner, and Robert L. Craven, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 8,600, Feb. 4, 1970, abandoned. This application Nov. 15, 1971, Ser. No. 198,815
Int. Cl. D01b *3/04*
U.S. Cl. 19—66 R 1 Claim

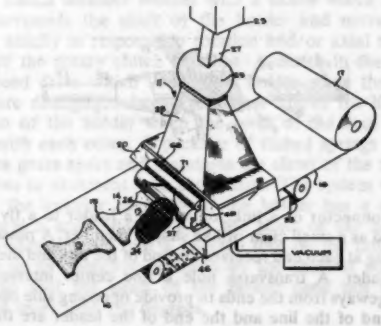


A procedure for processing staple fibers into uniform batts by the use of a water spray to wet the fibers and a compression device to depress the fibers more densely into batt form.

3,717,905
AIR LAYING APPARATUS

Warren R. Furbeck, Knoxville, Tenn., assignor to International Paper Comapny, New York, N.Y.

Continuation-in-part of Ser. No. 26,002, April 6, 1970, abandoned, which is a continuation-in-part of Ser. No. 672,477, Oct. 3, 1967, Pat. No. 3,509,604. This application Aug. 23, 1971, Ser. No. 174,092
Int. Cl. D01g *25/00*
U.S. Cl. 19—148 6 Claims



A stream of air carries loose fibers through enclosed ducts and deposits them in a series of equally spaced, substantially identical pads on a continuously moving web as it moves through a generally enclosed chamber. The web and now formed pads exit the chamber through an opening which is sealed by a unitary seal roll. The seal roll is provided with a circumferential cavity corresponding to the contour of the individual pads and is of a circumference equal to the distance between leading edges of successive pads. The seal roll is rotated at a tangential velocity equal to the linear velocity of the web moving under the roll so that a pad passing under the

roll mates in the cavity in the roll surface thereby sealing against air leakage into the generally enclosed chamber and compacting the fibers of the pad in a controlled manner.

3,717,906
CABLE TIE
Peter M. Wells, Sycamore, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.
Filed Sept. 29, 1970, Ser. No. 76,524
Int. Cl. B65d *63/00*; A44b *17/00*
U.S. Cl. 24—16 PB **7 Claims**

A cable tie including a flat ratchet toothed strap and a hollow frame having pawls to engage the ratchet teeth of the strap. The pawls extend from opposite walls of the frame at the entrance thereto and converge in the direction of the outlet. The pawls terminate short of the outlet of the frame in free end surfaces which are generally flat and which are back tapered. The ratchet teeth on the strap are also back tapered and are bordered by flanges. In one modification, the tip of the strap is bent slightly out of the plane of the strap. In another modification, a mounting boss is attached to the frame. In yet another modification, an indicia receiving plate is formed between the strap and the frame.

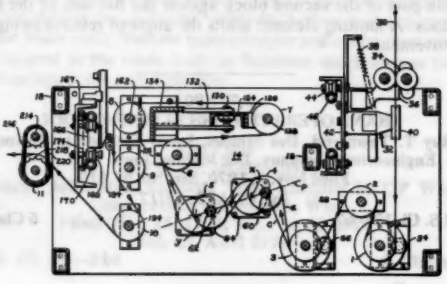
3,717,907
LEADER CONNECTOR
Gerald B. Klein, 13451 Stuart Court, Broomfield, Colo.
Filed March 25, 1971, Ser. No. 128,015
Int. Cl. F16g *11/00*, *11/02*
U.S. Cl. 24—128 **16 Claims**

A connector or a link for joining a leader to a fly line is formed as a small cigar or like shaped member. A passageway opening at each end receives the end of the line and the end of the leader. A transverse hole at the center intersects the passageways from the ends to provide opposing side openings. The end of the line and the end of the leader are threaded through their passageways to project from the side openings. They are then knotted and the knots are pulled back into the side opening to complete the connection.

3,717,908
DEFORMABLE FASTENING DEVICE
Joseph Perina, Huntington, N.Y., assignor to American Velcro Inc., New York, N.Y.
Filed March 31, 1971, Ser. No. 129,904
Int. Cl. A44b *17/00*
U.S. Cl. 26—204 **6 Claims**

There is described a deformable fastening member of a separable type fastener including a flexible backing strip and a multiplicity of hooking elements projecting from one surface thereof. The backing strip includes a plurality of spaced apart relief slots extending into the strip from the edge portions thereof. The slots allow the strip to be easily bent and attached to substantially any curved surface.

3,717,909
CLOTH STRAIGHTENING APPARATUS
J. Douglas Robertson, Taunton, Mass., assignor to Mount Hope Machine Company, Incorporated, Taunton, Mass.
Filed May 13, 1970, Ser. No. 36,848
Int. Cl. D06h *3/12*
U.S. Cl. 26—51.4 **20 Claims**

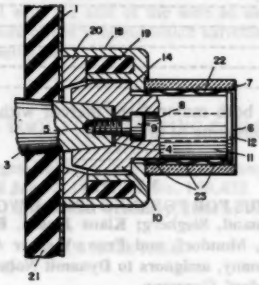


A cloth straightener for knitted or woven cloth comprises a series of feed rolls and cloth straightening rolls, at least some of which are driven at different or differentiable linear surface velocities in predetermined, adjustable ratios. Various zones of the cloth, defined between successive driven rolls, can thus be subjected to different degrees of tension. In each zone, the minimum level of tension is applied that is found necessary to the optimum performance of various feeding, straightening, and detecting operations.

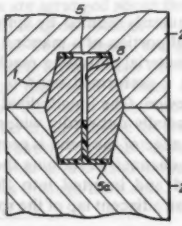
3,717,910
HEATABLE PIN ASSEMBLY FOR TREATING THREAD
Karl Fries, Elsenfeld, Germany, assignor to Akzona Incorporated, Asheville, N.C.
Filed April 10, 1970, Ser. No. 27,224
Claims priority, application Germany, April 19, 1969, P 19 19 935.0
Int. Cl. D02j *13/00*
U.S. Cl. 28—62 **1 Claim**

A heatable stretching and fixing pin assembly for thread or yarn treatment wherein a heated, stationary, cylindrical metal

pin is equipped with an interchangeable thread-contacting collar which is mounted and held on the pin by a radially-compressible, annularly-fitting and heat-conducting metallic element such as a basket spring or tolerance ring.

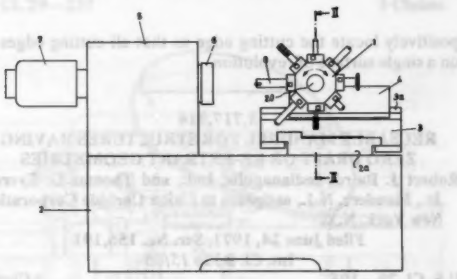


3,717,911
METHOD OF MAKING A NIPPLE-ELECTRODE JOINT
Irvin William Gazda, Johnson City, Tenn., assignor to Great Lakes Carbon Corporation, New York, N.Y.
Filed Feb. 9, 1971, Ser. No. 113,995
Int. Cl. H01j 9/00
U.S. Cl. 29—25.14 **8 Claims**



The invention relates to nipple-electrode assemblies and joints, such as those used in electric arc furnaces, and to a means of distributing thread clearance throughout the assembly and/or joint. These means include the pre-positioning of the nipple in the socket of the electrode section into which the nipple is threaded so as to provide a clearance between the non-load bearing flanks of the threads of said threaded nipple and said threaded electrode socket and the placing within the space between the base of the nipple and the bottom of the socket of the electrode section a hot, non-gaseous fluid, carbonizable material which solidifies upon cooling, thereby preparing a preassembly wherein the nipple is fixed in the electrode section, thereby maintaining the aforedescribed prepositioning and thread clearance and thereby also providing room for thermal expansion of the threads of the connection. The hot, carbonizable material is introduced into the space between the base of the nipple and the bottom of the socket, while in a hot, fluid condition, through a hole in the nipple after the nipple has been threaded into the electrode socket, after which the carbonizable material solidifies. Upon connection of the projecting end of the nipple into a socket of an electrode section and use in a column of electrodes in an electric arc furnace, the solidified carbonizable material again becomes heated, melts and some of it flows downwardly through the hole into the corresponding space in the socket of the electrode section of the column and then becomes solid and carbonizes due to the heat encountered, thereby locking the nipple in the sockets of both electrode sections joined.

3,717,912
INDEXING APPARATUS FOR TOOL HOLDERS OF MACHINE TOOLS
Heinrich Lahm, Esslingen-Sirnau, Germany, assignor to Index-Werke KG Hahn & Tessky, Esslingen, Germany
Filed Sept. 16, 1971, Ser. No. 181,119
Claims priority, application Germany, Mar. 3, 1971, P 21 10 147.3
Int. Cl. B23b 7/04
U.S. Cl. 29—39 **26 Claims**

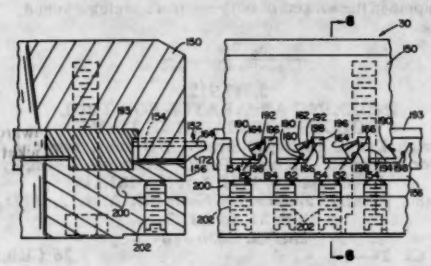


The turret-shaped holder for a set of tools in a machine tool is indexible by an apparatus which employs a pair of clutch members one of which is rotatable with reference to the other clutch member to thereby disengage a face gear on the holder from a stationary face gear so that the holder can be rotated to a selected angular position. The rotary clutch member meshes with a sleeve which rotatably surrounds the shaft of the holder and moves the holder axially in response to rotation and/or axial movement of the rotary clutch member. A clutch in the variable-speed drive which rotates the holder when the face gears are disengaged from each other allows for limited rotation of the holder when the teeth of the face gears mesh with each other. A package of dished springs urges the face gears apart and maintains the claws of the clutch members in abutment with each other. The system which selects the angular positions of the holder has a set of cams which are rotatable with the shaft of the holder. Such system insures that a selected tool on the holder is moved to its operative positioin by the shortest possible route so that the shaft of the holder need not rotate through more than 180 degrees.

3,717,913
GEAR MAKING
Paul Maker, Marion, Mass., assignor to Bird Island, Inc., Boston, Mass.
Division of Ser. No. 11,503, Feb. 16, 1970, Pat. No. 3,638,850.
This application Dec. 13, 1971, Ser. No. 207,474
Int. Cl. B26d 1/12
U.S. Cl. 29—103 C **7 Claims**

In gear making apparatus a rotary cutter has a tool holding body with a plurality of tools removably mounted in recesses spaced around the body periphery, each tool having a profile generating cutting edge at the intersection of two planar sur-

faces, each recess having at least one planar surface in flush contact with one of the planar surfaces of the mounted tool to



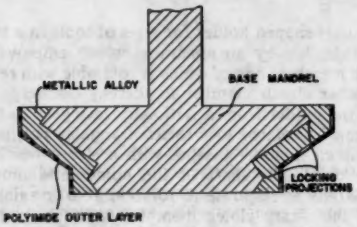
positively locate the cutting edge so that all cutting edges lie on a single surface of revolution.

3,717,914

REUSABLE MANDREL FOR STRUCTURES HAVING ZERO DRAFT OR RE-ENTRANT GEOMETRIES

Robert J. Baird, Indianapolis, Ind., and Thomas G. Everett, Jr., Flanders, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed June 24, 1971, Ser. No. 156,191
Int. Cl. B32b *15/08*
U.S. Cl. 29—195 3 Claims



A mandrel, and process therefor, consisting of a high melting temperature base material, such as aluminum, having an undercoating of a low melting temperature metallic alloy and an overcoating of a polyimide material. In casting or plasma deposition applications, the undercoated metallic alloy is removed at an elevated temperature thereby facilitating the removal of the base mandrel.

3,717,915

ALUMINUM OFFSET PRINTING PLATE

Adolf Teubler, Uedorf, near Bonn, and Paul Eversheim, Bonn, Germany, assignors to Vereinigte Leichtmetallwerke GmbH, Bonn, Germany

No Drawing. Original application Sept. 24, 1969, Ser. No. 860,805, now Patent No. 3,672,878, dated June 27, 1972. Divided and this application Oct. 26, 1971, Ser. No. 192,621
Claims priority, application Germany, Sept. 27, 1968, P 17 83 066.9; June 9, 1969, P 19 29 146.4
Int. Cl. B32b *15/20*; B41n *1/08*
U.S. Cl. 29—197.5 12 Claims

An aluminum printing plate for use in offset roller plating comprising a core consisting of an aluminum base alloy including the following alloying components:

	Percent
Magnesium	0.8–2.5
Silicon	0.2–0.4
Manganese	0.8–1.4
Copper	0.05–0.3
Iron	0.2–0.6
Zinc	0.01–0.2
Aluminum	Balance

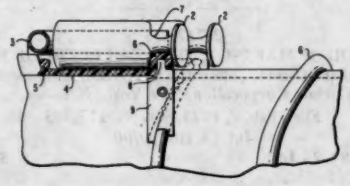
provided on both major faces thereof with plating layers essentially consisting of aluminum.

3,717,916

APPARATUS FOR FORMING SPIRAL WOUND PIPES

Michael Wienand, Siegberg; Klaus Jensen, Buisdorf; Franz Primessing, Mondorf, and Franz-Werner Alfter, Oberlar, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft Troisdorf, Germany

Division of Ser. No. 764,427, Oct. 2, 1968, Pat. No. 3,606,670.
This application Sept. 8, 1971, Ser. No. 178,706
Int. Cl. B23p *19/00, 19/02*
U.S. Cl. 29—200 B 4 Claims



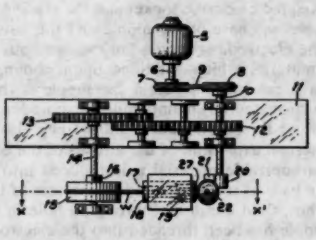
A pipe is continuously formed by spirally winding a band onto the cylindrical portion of a mandrel after the band exits from a synthetic material extruding machine while still thermoelastic or after a preformed band is passed through the suitable heating device. One longitudinal edge of the band is provided with a radially outwardly widening tongue and the other longitudinal edge of the band is provided with a radially inwardly widening channel. In forming the pipe, the tongue is cooled to be rigid and inserted into the thermoelastically heated channel of an adjacent lap of the spirally wound band.

3,717,917

APPARATUS FOR CUTTING A WIRE AND CRIMPING A WINDING TO THE WIRE

John L. Marks, Peabody, Mass., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed May 26, 1971, Ser. No. 147,096
Int. Cl. H01r *43/00*
U.S. Cl. 29—203 D 10 Claims



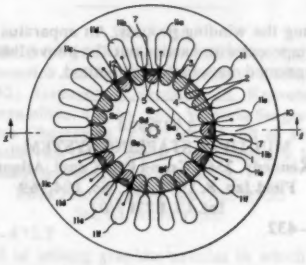
This is an apparatus for cutting a wire and crimping a winding to the cut wire. A drive shaft is coupled to means for feed-

ing wire to be cut and rotating means for cutting the wire and crimping the winding to the wire. The rotating cutting means includes a disk cutter having a bevelled edge. During the course of one revolution of the cutter, the outermost portion of the bevelled edge is positioned adjacent the point where the wire is to be cut, and the plane of the bevelled edge is slightly less than parallel with the axis of the wire so as to cause a crimping to the wire of the winding which surrounds the wire while the wire is being cut.

3,717,918
INSERTING TOOL FOR INSERTING COILS INTO STATOR GROOVES

Hans Droll, 6 Bergen-Enkheim, Nordring, Germany

Filed June 7, 1971, Ser. No. 150,431
Claims priority, application Germany, June 6, 1970, P 20 27 979.2
Int. Cl. H02k *15/06*
U.S. Cl. 29—205 R **5 Claims**

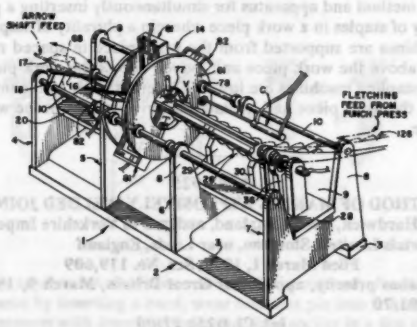


A device for placing pre-wound coils into stator grooves including a generally circular stripper member movable through the stator. Projections are arranged about the periphery of the stripper member with fingers located in the slots formed between the projections. Some fingers, and preferably at least one finger adjacent each tooth which contains a prewound coil to be placed into the stator is fixed onto the stripper member for movement therewith as the latter moves through the stator. A guide rod fixed relative to the stator is placed between each fixed mounting finger and the inner periphery of the stator to prevent wear of the fixed mounting finger as the stripper member moves through the stator.

3,717,919
FLETCHING MACHINE

Fred B. Bear, Lake Street, Grayling, Mich.

Filed April 27, 1972, Ser. No. 248,020
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 R **33 Claims**

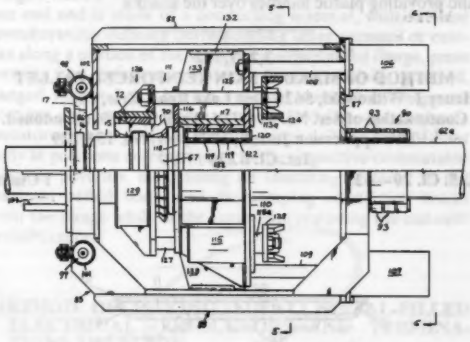


A fletching apparatus for arrows includes means feeding unfletched shafts to a chuck device for holding the shaft while a reciprocating carriage surrounding the shaft moves to a first position where one or a plurality of carriage-mounted applicator assemblies each pick up a feather or vane from a continuous feather supply disposed rearward of the chucked arrow nock. The carriage then shifts to a second position locating the applicator assemblies forward of the nock whereupon one or more of the assemblies are actuated to deposit the feather(s) on the shaft concurrently with the actuation of sealing means engaging the base of the feather(s) to attach same to the arrow shaft.

3,717,920
APPARATUS FOR MAKING AN UNDERWATER PIPELINE CONNECTION

John P. Oliver, and Alfred W. Wedel, Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Division of Ser. No. 30,538, April 21, 1970. This application March 25, 1971, Ser. No. 127,946
Int. Cl. B23p *19/04*; F16l *1/00*
U.S. Cl. 29—237 **3 Claims**



A lateral pipeline being laid is connected to a main pipeline lying on the bottom of the ocean by a tie-in assembly that is connected to the lateral line above the surface of the water. The main line is equipped with a stub section of pipeline to which the lateral is to be connected. The angle between the lateral and the main line is measured and from this the tie-in assembly is designed. This assembly also includes two ball and socket type joints that permit limited misalignment between the sections of the tie-in assembly and the stub section of the pipeline connected to the main line and also allows relative rotation between at least two portions of the tie-in assembly. A connector assembly is used to connect the tie-in assembly to the stub pipeline section. An actuator is releasably connected to the tie-in assembly above the surface of the water and lowered with the tie-in assembly into the water to actuate the connector assembly to connect the tie-in assembly and the stub pipeline section. This actuator can then be recovered and used again.

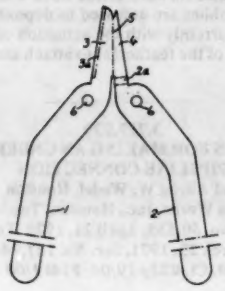
3,717,921
MANUFACTURE OF SCISSORS, TONGS, PLIERS OR THE LIKE CUTTING OR GRIPPING TOOLS

Guran Ygfors, Sollentuna, Sweden, assignor to Ygfors Trading AB, Jarfalla, Sweden

Filed Oct. 14, 1970, Ser. No. 80,730
Claims priority, application Sweden, Oct. 17, 1969, 14266/69
Int. Cl. B23q *17/00*; B23p *17/00, 19/00*
U.S. Cl. 29—407 **16 Claims**

An improved cutting or gripping implement manufactured

by punching out a blank from sheet metal, the blank having a configuration of shanks, bending the blank into a shank structure, laminating the shanks, connecting them by a fastener, and providing plastic handles over the shanks.



3,717,922

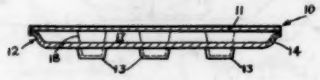
METHOD OF MAKING SKIN REINFORCED PALLET

Henry J. Witkowski, 5625 East Lake Road, Erie, Pa.

Continuation of Ser. No. 814,724, April 9, 1969, abandoned. This application June 8, 1971, Ser. No. 151,129

Int. Cl. B23p *17/00*

U.S. Cl. 29—421 **1 Claim**



The disclosure describes a preferred form of a method of making a pallet by forming legs on a sheet of material and attaching a second sheet to the marginal edges of the first sheet and filling the space between the sheets and the legs with a foamable plastic material such as polyurethane, or the like. The sheets may be any vacuum formable material such as thermoformable plastic. They could also be other materials that may be formed or molded into sheets with legs, such as cardboard, metal, wood, or other suitable structural materials.

3,717,923

METHOD AND AN APPARATUS FOR MANUFACTURING A TAPE CASSETTE

Kinjiro Arai, and Yoshio Nakatani, both of Yokohama, Kanagawa-ken, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Kanagawa-ken, Japan

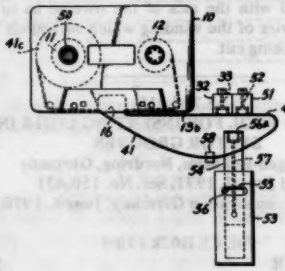
Filed Feb. 5, 1971, Ser. No. 112,871

Claims priority, application Japan, Feb. 7, 1970, 45/10378

Int. Cl. B23p *19/00*, *19/04*

U.S. Cl. 29—429 **10 Claims**

A method for manufacturing a tape cassette comprises the process steps of pulling a tape leader out of a tape cassette case, cutting off the pulled out tape leader, jointing one end of the cut off tape leader piece and one end of a magnetic tape, winding a predetermined length of the magnetic tape thus jointed into a spool provided in the cassette case, jointing the other cut off tape leader piece and the other end of the magnetic tape and winding up the whole magnetic tape and the tape leader piece into the cassette case. A winding of the magnetic tape is placed outside of the cassette case and the magnetic tape is supplied to the spool in the cassette case from outside during the winding process. An apparatus for manufacturing a tape cassette carries out the above listed steps of the aforementioned manufacturing method.



3,717,924

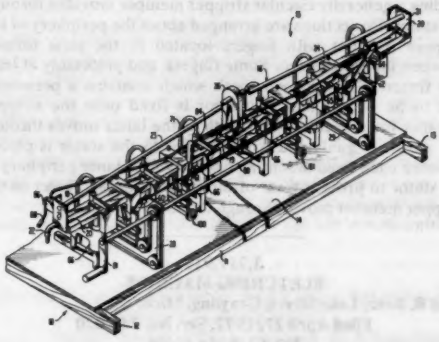
MULTIPLE STAPLING SYSTEM

George W. Kennedy, 2564 Grand Prix Court, Atlanta, Ga.

Filed Jan. 8, 1971, Ser. No. 104,969

Int. Cl. B27f *7/02*

U.S. Cl. 29—432 **10 Claims**



A method and apparatus for simultaneously inserting a plurality of staples in a work piece wherein a plurality of stapling machines are supported from the work piece in spaced relation above the work piece and moved across the work piece. The stapling machines are lowered intermittently into contact with the work piece and actuated to drive staples in the work piece.

3,717,925

METHOD OF MAKING EXPLOSIVELY WELDED JOINTS

Roy Hardwick, Leeds, England, assignor to Yorkshire Imperial Metals Limited, Stourton, near Leeds, England

Filed March 1, 1971, Ser. No. 119,609

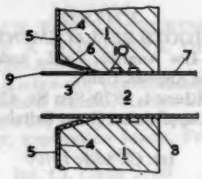
Claims priority, application Great Britain, March 9, 1970, 11,181/70

Int. Cl. B23k *21/00*

U.S. Cl. 29—470.1 **6 Claims**

A method of securing in an aperture in a tubeplate of a heat exchanger a thin tube of a corrosion resistant costly metal

such as tantalum, in which a thin sheet of cladding, also of tantalum, is placed over the tubeplate in which the tube is secured to the cladding sheet by a lap weld within the aperture



by means of an explosive welding technique. The tube is also welded to the tubeplate material within the aperture to ensure lateral rigidity.

3,717,926

METHOD OF JOINING GRAPHITE ARTICLES

Leonid Trifonovich Anikin, Nizhegorodskaya ulitsa, 94, korpus 3, kv. 42; Gennady Alexandrovich Kravetsky, Novo-Basmannaya ulitsa, 4/6, kv. 201; Viktoria Sergeevna Dergunova, ulitsa Chaplygina, 13/2, kv. 85, all of Moscow, and Valery Vasilievich Dutov, ulitsa Volkovskaya, 9, kv. 16, Ljubertsy Moskovskoi oblasti, all of U.S.S.R.

Filed Jan. 29, 1970, Ser. No. 6,950
Int. Cl. B23k *31/02*
U.S. Cl. 29—472.7 **2 Claims**

A method of joining graphite articles in which a layer of metal is interposed between the surfaces of the articles to be joined, after which the joint area is heated to a temperature which is at least as high as the temperature at which a eutectic of the carbide of the metal and carbon is formed, or, alternatively, to a temperature somewhat higher than the said temperature whereby the resistance of the thus obtained joint to high temperature is considerably increased.

3,717,927

METHOD OF MAKING TIRE STUDS

Clarence J. Smith, Rockford, Ill., assignor to The Shaler Company, Waupun, Wis.

Continuation of Ser. No. 863,676, Sept. 25, 1969, abandoned, which is a continuation of Ser. No. 736,876, April 10, 1968, abandoned, which is a division of Ser. No. 542,075, April 12, 1966, Pat. No. 3,404,718. This application Sept. 15, 1970, Ser. No. 72,520
Int. Cl. B21d *39/00*; **B23p** *11/00*
U.S. Cl. 29—517 **5 Claims**

This application discloses a tire stud and method of making the same by inserting a hard, wear resistant pin into frictional engagement with interference means in a socket in a tire stud body section such that the end of the pin is spaced from the bottom of the socket, and securing said pin in said socket against displacement during the use of the tire stud.

3,717,928

METHOD OF MANUFACTURING COMMUTATORS FOR SMALL-SIZE ELECTRIC MACHINES

Terumoto Yamaguchi, Anjo, Japan, assignor to Nippondenso Kabushiki Kaisha, Aichi-ken, Japan

Filed Jan. 5, 1971, Ser. No. 104,074
Claims priority, application Japan, Jan. 20, 1970, 45/5252
Int. Cl. H01r *43/00*
U.S. Cl. 29—597 **1 Claim**

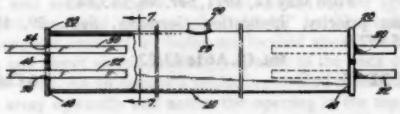
A method of manufacturing commutators for small-size electric machines, which includes the steps of press forming a flanged hollow cylindrical workpiece, which has a flange at one end and is made of a conducting material, with outward protuberances defining corresponding inner recesses or cavities along a portion of the workpiece adjacent the flange, press forming the resultant workpiece into an axially grooved, flanged hollow body having eventual commutator segment portions and outward bridge portions bridging adjacent commutator segment portions, forming inner nails on the resultant body at positions corresponding to the respective commutator segment portions, mold filling an insulating material in the resultant nailed body, and die-stamping connection hooks from the flange while at the same time removing the outward protuberances.

3,717,929

METHOD OF MAKING ALKALI METAL-FILLED ELECTRICAL CONDUCTORS AND TERMINATIONS THEREFOR

Cliff C. Atkinson, Niagara Falls, Rolland O. Butler, Grand Island, and Francis J. Ross, Niagara Falls, N.Y., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 3, 1970, Ser. No. 43,043
Int. Cl. H01b *13/00*
U.S. Cl. 29—624 **10 Claims**



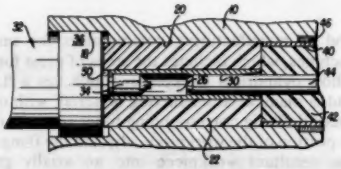
A method of fabricating a sodium-filled conductor with low-resistance copper terminations by welding copper inserts, which are to provide the desired terminations, into an aperture in a support of a material which is readily weldable to steel but more difficult to weld to copper, the support being of relatively small size, however, so that the copper insert can be readily hermetically joined to the support by welding. The support is then positioned so as to close an opening in a steel casing and welded thereto with the insert extending from the interior to the exterior of the casing. The casing is cleaned internally and molten sodium is flowed into it in an environment of an inert gas while maintaining the casing at a temperature above the melting point of sodium, until the casing is filled and the portions of the copper inserts extending inside the casing are immersed in the molten

sodium. Thereafter the casing and the molten sodium are cooled to solidify the sodium and to provide an intimate low-resistance contact between the solidified sodium and the portion of the insert within the casing. All openings through the casing are hermetically sealed after it has been filled with the sodium. Low-resistance terminations are thereby provided readily and reproducibly.

3,717,930
METHOD OF CONNECTING A CENTER CONTACT WITHIN A COAX CONNECTOR

Armand Samuel Apa, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed July 6, 1971, Ser. No. 159,847
Int. Cl. H02g *15/00*; H01r *43/00*; H05k *43/00*
U.S. Cl. 29—629 4 Claims

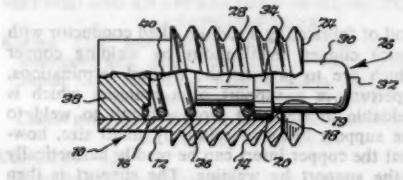


A method of connecting a center contact within a coax connector is disclosed which involves inserting a dielectric sleeve into one end of a coupling member for connecting high frequency coaxial cable so that the center conductor of a cable terminating in the coupling member is received in the inner end of the dielectric sleeve, inserting a center contact member into the other end of the dielectric sleeve a predetermined distance with an insertion tool for press-fitting the same over the cable center conductor in the dielectric sleeve, and removing the insertion tool whereby the center contact member is left positioned within the dielectric sleeve and firmly connected to the cable center conductor in one connector half of a coupling assembly ready for being connected to the other half thereof.

3,717,931
ANCHOR FOR DENTAL PROSTHESES

Karl Konig, Hagen-Haspe, Germany, assignor to Bohadan Melnyk, Buffalo, N.Y.

Filed May 14, 1971, Ser. No. 143,443
Claims priority, application Germany, Sept. 29, 1970, G 70 35 972.9
Int. Cl. A61c *13/22*
U.S. Cl. 32—5 6 Claims



An anchor comprising a tubular housing adapted to be threaded into a tapped opening in a simulated tooth forming a part of a dental prosthesis. An axially movable, spring biased plunger is mounted in the housing for movement into an extended position of use in the natural undercut area of a fixed tooth in a patient's mouth and into a retracted position within the housing. The plunger is provided with an annular shoulder engagable with an abutment shoulder in the housing for limited movement into the extended position and an inner end engagable with a plug mounted in the housing for limited movement into the retracted position.

3,717,932
TOOTH REPLACEMENT

Herbert Brainin, Los Angeles, Calif., assignor to Vitredent Corporation, Los Angeles, Calif.

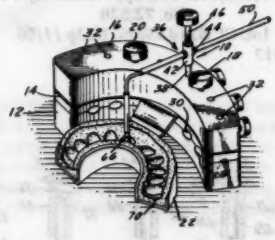
Filed June 1, 1970, Ser. No. 42,069
Claims priority, application Great Britain, March 19, 1970, 13,196/70
Int. Cl. A61c *13/00*
U.S. Cl. 32—10 A 9 Claims

A dental implant member for attachment to an artificial-tooth crown consists of or is externally coated with an impermeable carbon. The implant is preferably cone shaped and most preferably has external splines along the length.

3,717,933
DENTAL APPARATUS

Denny W. Charron, 9361 Randall Ave., La Habra, Calif. 90631

Filed Nov. 1, 1971, Ser. No. 194,118
Int. Cl. A61c *13/00*
U.S. Cl. 32—11 6 Claims



A dental apparatus or jig for use in making dental restorations. There is support means having three parts for clamping a dental tray or impression holder in position and for the vertical rods of dowel pin holders and support means. Each dowel pin holder and support means comprises an assembly of a tubular member held in a horizontal position by a vertically adjustable rod, and a core secured in the tubular member, a free end of the core extending outwardly beyond the inner end of the tubular member and said free end is turned downwardly, there being a dowel pin clamp secured to the lower end of the

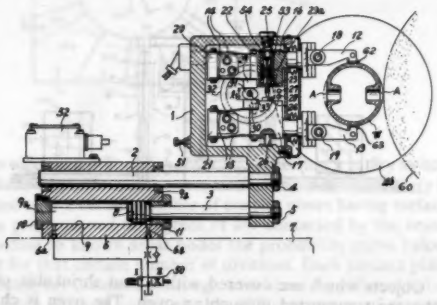
down-turned free end portion for releasably holding a dowel pin. The exposed free end portion of the core is pliant and is easily bent to hold a dowel pin at a selected or required position or angle.

3,717,934

SIZING DEVICE FOR MEASURING THE DIAMETER OF A WORKPIECE OF NON-CIRCULAR CROSS-SECTION

Mineo Ishikawa, Kariya-shi, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Japan

Filed Feb. 26, 1971, Ser. No. 119,213
Claims priority, application Japan, Feb. 26, 1970, 45/16,488
Int. Cl. G01b 5/00
U.S. Cl. 33—147 N 10 Claims



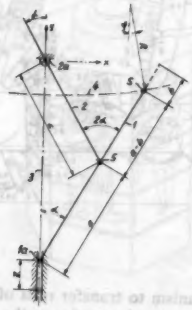
A sizing device has a pair of measuring feelers urged into engagement with a rotating workpiece of non-circular cross-section. The feelers are operated by a cam alternately to engage with and disengage from the workpiece for measuring a particular single diameter of the workpiece. The cam is rotated in coordination with the rotation of the workpiece by a synchronous receiver through the synchronous signal generated by a synchronous transmitter in response to the rotation of the workpiece.

3,717,935

INCLINOMETER OR OSCILLATION MEASURING DEVICE

Johann Meier, 6645 Brione sopra Minusio, Casa Clarissa, Switzerland

Filed Oct. 12, 1970, Ser. No. 80,051
Claims priority, application Switzerland, Oct. 15, 1969, 15531/69
Int. Cl. G01c 9/12
U.S. Cl. 33—391 13 Claims



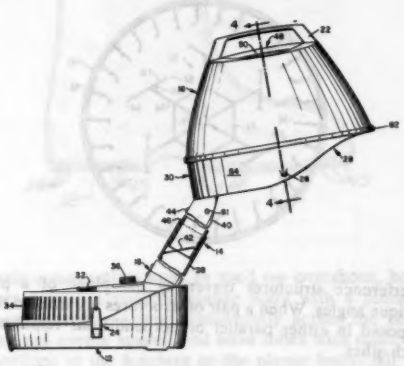
An inclinometer or oscillation measuring device which is manifested by the features that there is provided a pendulum member having an elliptically guiding arrangement consisting of a link hingedly connected with this pendulum member and a rectilinear displacement path for the pivot point of the pendulum member along a line extending through the pivot point of the link at the end remote from the pendulum. Furthermore, the pendulum and link components are dimensioned and/or arranged in such a way that the link is balanced and the pivots so located that the center of gravity of the pendulum member travels along a curve with a continuously upward curvature from its central point.

3,717,936

RIGID HAIR DRYER HOOD

Robert J. Tolmie, Fairfield, and Zoran Kovacic, Bridgeport, both of Conn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Feb. 26, 1971, Ser. No. 119,315
Int. Cl. A45d 20/00
U.S. Cl. 34—99 12 Claims



A rigid hair dryer hood is mounted to a conventional base containing means for supplying pressurized hot air to the hood through a generally vertical duct on which the hood is mounted. The hood has a generally circular opening at the center of the top thereof allowing the escape of hot moist air. Hot air is directed up the duct to a lower ring of vent holes located around the rear base of the hood just above the neck level approximately from ear to ear. A second ring of holes above ear level are substantially equally spaced around the back of the hood from approximately temple to temple. The first and second ring of air holes direct the air upwardly toward the head at approximately 45° to the vertical. A rectangular array of air holes are located above the second ring and direct air substantially normally to the back contour of the head. An air directing bridge is provided extending from this array upwardly and across the opening in the top of the hood. Air holes therein direct hot air substantially normally across the midportion of the top of the head. A third ring of air holes direct air vertically along the inside of the front of the hood just above the forehead from substantially temple to temple.

3,717,937

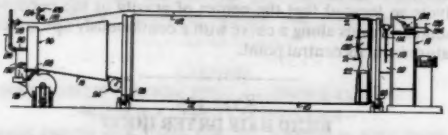
FLIGHTING FOR DEHYDRATOR DRUM

Stanley P. Thompson, 2718 Osborn Rd., Topeka, Kans.

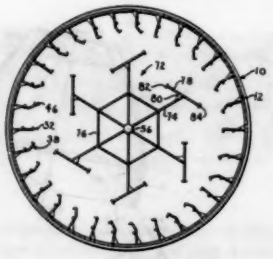
Continuation-in-part of Ser. No. 773,188, Nov. 4, 1968, Pat. No. 3,593,430. This application April 19, 1971, Ser. No. 135,078
Int. Cl. F26g 11/02
U.S. Cl. 34—108 9 Claims

A dehydrator includes a drum having an inlet and an outlet mounted for rotation about its longitudinal axis. Internal flighting for facilitating uniform drying of material passed through the drum includes a plurality of circumferentially

spaced vanes which are rigid with the inner surface of the drum. At least a portion of the vanes are provided with laterally extending cleats which break up clumps of material falling off the vanes. Centrally disposed in the drum is another



arrangement of flighting which acts as a retainer for catching material which gravitates from the aforementioned vanes. The central flighting comprises a shaft with a plurality of longitudinally extending axially projecting plates having one or more



interference structures traversing the plane of a plate at oblique angles. When a pair of structures are utilized they are disposed in either parallel or perpendicular relationship to each other.

3,717,938

APPARATUS AND METHOD FOR DRYING OR PREHEATING PULVERULENT MATERIAL

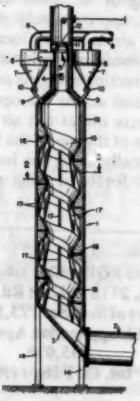
Karl Jens Sylvest, Copenhagen-Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Sept. 28, 1970, Ser. No. 68,050

Claims priority, application Great Britain, Sept. 2, 1969, 43,349/69

Int. Cl. F26b *17/12*

U.S. Cl. 34—168 **10 Claims**



An apparatus and method for drying or preheating granular or pulverulent material. The apparatus is in the form of an upright stack or tubular conduit within which a continuous helical surface extends sloping in a downward manner. Heated gas flows from the bottom of the stack along at least one vertical channel within the stack to heat the material descending down the stack. Specific means are provided within the stack to prevent the gas from flowing continuously over the helical surface.

3,717,939

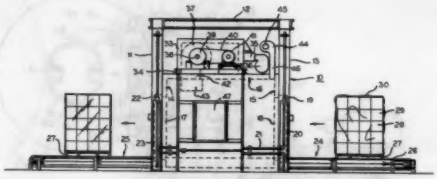
SHRINK FILM OVEN

John Z. Mitchell, Watertown, Wis., assignor to Oven Systems, Inc.

Filed Feb. 23, 1971, Ser. No. 118,120

Int. Cl. F26b *19/00*

U.S. Cl. 34—230 **8 Claims**



Objects which are covered with a heat shrinkable plastic film are transported through an oven. The oven is characterized by having an array of hot gas discharge outlets which are fed from a common source. The outlets are equipped with louvers for directing the hot gases in a manner that permits control of the film shrinkage sequence. The outlets are fed from a damper controlled distribution system that is adapted for controlling both the volume and velocity of the hot gases.

3,717,940

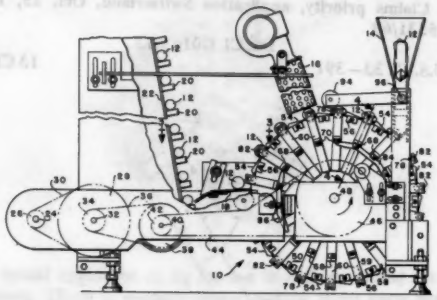
COIN MACHINE

Richard D. Wylie, Gaffney, and Bobby Morrison, Spartanburg, both of S.C., assignors to Deering Milliken Research Corporation, Spartenburg, S.C.

Filed May 3, 1971, Ser. No. 139,457

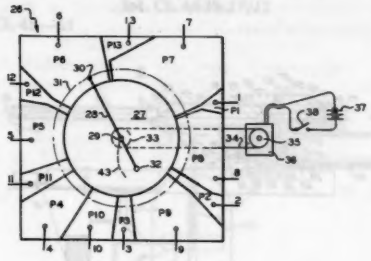
Int. Cl. F26b *19/00*

U.S. Cl. 34—236 **11 Claims**



Improved mechanism to transfer rolls of coins wrapped in shrink film from the wrapping station to the heat shrink station and further to the coin elevator by means of a rotary transfer drum which securely holds the rolls of coins during transfer thereof.

3,717,941
PROBABILITY TEACHING AID
Benjamin E. Tomerlin, 214 Augusta Drive, North Syracuse, N.Y.
Filed Dec. 30, 1971, Ser. No. 213,924
Int. Cl. G09b *19/00*
U.S. Cl. 35—30 3 Claims

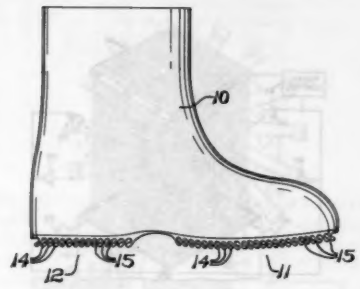


An electrical probability teaching device has a rotary switch in which a brush contact connected to one side of a battery is rotated over a certain number of contact plates having surface areas proportioned in degrees of arc contacted by the brush according to known areas under the probability curve calculated for that certain number of divisions. Each contact plate is electrically connected through a resistor of a different value through a readout device so that different values of readout are obtained for the various plates on which the brush comes to rest. A checkerboard arrangement of a plurality of pins, arranged in rows and columns, in which each interior pin is connected by like resistors to each of the four pins adjacent to it vertically and horizontally, is used to teach the use of the probability curve in solving problems having two variables. The electrical connection between the battery and the resistors of different value is provided with a male-female connection so that the connectors may be separated and one connected to one of the pins and the other used as a probe in teaching the method of using the probability curve in solving problems.

3,717,942
ROTATABLE AMUSEMENT AND EDUCATION DEVICE
Benedict F. Presby, 630 Humbolt Street, Brooklyn, N.Y.
Filed March 16, 1971, Ser. No. 124,819
Int. Cl. G09b *1/20*
U.S. Cl. 35—77 1 Claim

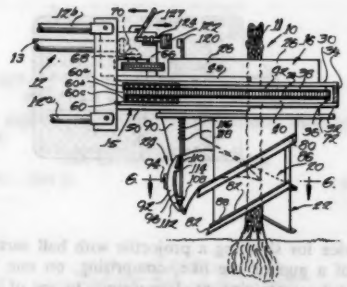
A toy for children for diversion and developing analytic observation, the toy consisting of a series of flat boxes having polygonic side edges, the boxes being stacked one over the other and rotatable about a center longitudinal axis so to selectively align certain of the polygonic side edge faces of the box, each of the faces having a drawing detail, so that when the correct faces are aligned together, the drawing details, together, compose a complete drawing of a person, an object, a word or any other visual design, thus solved by the child.

3,717,943
MUD RESISTANT ELASTOMERS
Roy L. Orndorff, Jr., Kent, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Aug. 23, 1971, Ser. No. 173,961
Int. Cl. A43b *13/06*
U.S. Cl. 36—32 R 13 Claims



A sole construction such as used on overshoes, boots or shoes having a resilient planar body with a plurality of spaced fins that extend transversely across the body. The fins are evenly spaced and have lobes with relatively thin portions at the juncture to the planar body. All fins are identical and are inclined relative to a horizontal plane. The fin structure may be applied to the sides of the boot structure to reduce mud pick-up through the ability of the fins to trap air between adjacent fins.

3,717,944
APPARATUS FOR ROOTED PLANT EXCAVATING
Samuel E. Clegg, 729 Bartlett Avenue, Plainfield, Ill.
Filed Nov. 3, 1970, Ser. No. 86,432
Int. Cl. A01g *23/06*
U.S. Cl. 37—2 R 28 Claims



A rooted plant and soil ball may be excavated from the surrounding soil by means of an apparatus, the preferred form of which comprises a pair of diametrically opposed soil cutting members held in fixed position on a rotatable, C-shaped support member for cutting a substantially cylindrical trench in the soil surrounding the plant. After the trench has been cut,

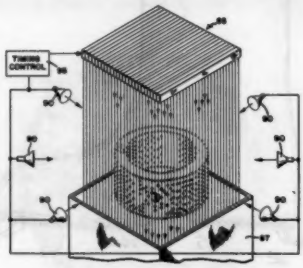
either the cutting members or a separate cutting element is moved inwardly relative to the support member for undercutting the plant.

3,717,945

IMAGE CONSTRUCTION SYSTEM USING MULTIPLE ARRAYS OF DROP GENERATORS

Richard P. Taylor; Russell H. Van Brimer, and Fred E. Culp, Dayton, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Division of Ser. No. 768,790, Oct. 18, 1968, Pat. No. 3,560,641. This application Sept. 8, 1970, Ser. No. 70,337
Int. Cl. G09f *19/02*
U.S. Cl. 40—106.25 2 Claims



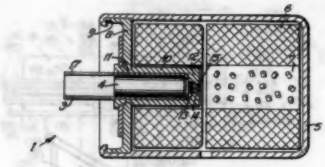
Arrays of laterally spaced orifices, all communicating with a liquid pressure supply, all subjected to vibration at the same frequency to separate the liquid jets into streams of individual drops, provide a system for locating all of the drops with a predetermined space-time correlation by irradiating the drops in space at a predetermined time to make them visible, thus creating variable three dimensional visible shapes for study.

3,717,946

DEVICE FOR SHOOTING A PROJECTILE

Rene M. J. Chavee, Genk, Belgium, assignor to Fabrique Nationale D'Armes de Guerre, Societe Anonyme, Herstallez-Liege, Belgium

Filed Oct. 6, 1970, Ser. No. 78,516
Int. Cl. F41c *27/06*; F42b *11/42*
U.S. Cl. 42—1 F 3 Claims



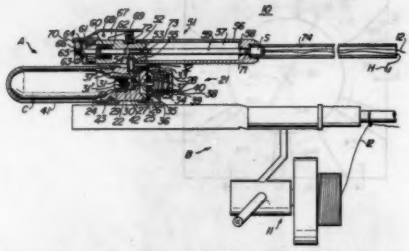
A device for shooting a projectile with ball cartridges by means of a gun or the like, comprising, on one hand, an adapter tube containing, at close vicinity to one of its ends, a damping cylinder made of a relatively resilient material and, on the other hand, a supporting tube contained in the projectile and opening onto the rear face thereof, the bottom of said supporting tube carrying a primer, the adapter tube being adapted, on one hand, to be inserted into said supporting tube and, on the other hand, to be slid about the barrel of the arm used for shooting. Also a projectile particularly conditioned to operate with said device.

3,717,947

FISHING DEVICE

Hideo Nomura, Chigasaki-shi, Japan, assignor to Miyata Industry Co., Ltd., Chigasaki-shi, Japan

Filed Mar. 24, 1971, Ser. No. 127,636
Claims priority, application Japan, Dec. 8, 1970, 45/108,264, 45/121,712; Dec. 28, 1970, 46/132,761
Int. Cl. A01k *91/02*
U.S. Cl. 43—19 7 Claims



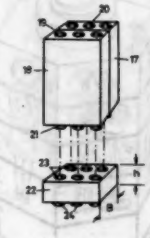
A fishing device comprising a fishing rod and a fluid pressure-actuated tool for casting a sinker and an associated line. The tool has a bore for receiving a neck portion of a small-sized bomb which contains a pressurized gas. The bore is in communication with a pressure storage chamber which is normally out of communication with the interior of a barrel to be loaded with the sinker. A valve located within the storage chamber is operable by a trigger and is employed to control the communication between the pressure storage chamber and the barrel. The valve also has a spring biased portion which passes through the breach plug member closing the rearward end of the pressure storage chamber.

3,717,948

UNIVERSAL UNIT FOR TOY BLOCKS

Walter Schnabel, Im Wolfsgalgen 25, 7141 Schwieberdingen, Germany

Filed Feb. 22, 1971, Ser. No. 117,238
Claims priority, application Germany, March 13, 1970, P 20 11 878.9
Int. Cl. A63h *33/08*
U.S. Cl. 46—25 5 Claims



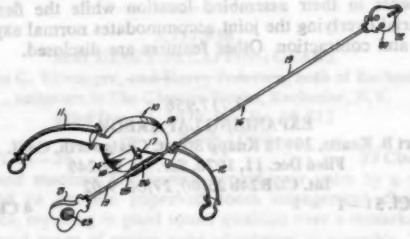
A universal block unit for interengagement with conventional toy blocks comprising a panel having normally offset rims along the longitudinal edges. The rims are provided with elements conforming to those of the toy blocks and inter-

locking therewith. The universal block has a height equal to a multiple of the toy blocks and a length equal to a multiple of the distance between the centers of the interlocking elements.

3,717,949
TETHERED AERIAL TOPS
Joseph T. Radovan, 101 N.W. 162nd Street, Miami, Fla.
Filed May 14, 1971, Ser. No. 143,482
Int. Cl. A63h *27/12*
U.S. Cl. 45—61 **1 Claim**

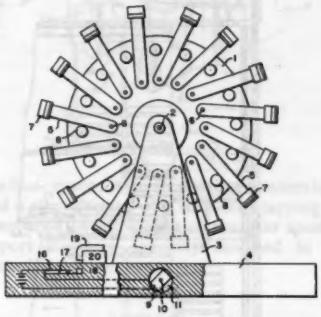
A yo-yo construction wherein the side disc members of the yo-yo spool are of integrally molded, substantially hollow construction is described. The spool disc members are formed with concave outer wall portions which are reinforced with a plurality of equidistantly peripherally spaced, diametrically extending web portions the converging inner ends of which merge to provide an axially extending cylindrical sleeve defining a cylindrical recess for the friction-fit reception of the interconnecting pin in the assembly of the yo-yo.

3,717,950
ADJUSTABLE DIVINING ROD DEVICE
Arthur P. Venditti, Salem, Mass., assignor to Reuben B. Klamer, Beverly Hills, Calif.
Filed Feb. 25, 1970, Ser. No. 14,056
Int. Cl. A63h *33/26*
U.S. Cl. 46—241 **3 Claims**



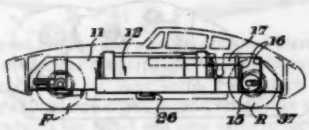
There is disclosed herein equipment for a game including a divining rod device, gameboard and playing cards. The divining rod device includes a handle member having pivotally attached thereto a counterbalanced arm or rod with a magnet at one end thereof. The gameboard is of laminated construction and has a metal innerlayer. The playing cards have various indicia thereon and are positioned at indicated locations on the gameboard. The divining rod device is held by the handle member substantially parallel with the board and several inches thereabove. The end of the rod with the magnet is in the form of a pointer which is swept back and forth over the board until this end makes contact with a card on the board because of the attraction of the magnet to the board. In this manner, a card is selected to thereby provide a "reading" according to the game.

3,717,951
TOY COMPRISING A MODEL OF A PERPETUUM MOBILE
Erland Samuel Ljungdahl, 9 Fafnerstigen, 18264, Djursholm, Sweden
Filed Apr. 30, 1971, Ser. No. 138,950
Int. Cl. A63h *33/26*
U.S. Cl. 46—243 **3 Claims**



A toy resembling a so called perpetuum mobile with a wheel provided with tiltable arms round its periphery which arms have weights at the outer ends thereof and are adapted to make a tilting movement when the wheel rotates, giving the impression to drive said wheel because of said tilting movement. The weights are constituted by permanent magnets which have poles of alternating polarity. For driving said wheel, there is an electromagnetic means for producing a rotating or linearly moving magnetic field built in or hidden in a base plate belonging to the toy. A permanent magnet which can be placed on said base plate so as to give impression of attracting said magnets of said wheel, is adapted to operate a switch hidden in said base plate for closing the current path from the battery (also hidden in said base plate) to said electromagnetic means.

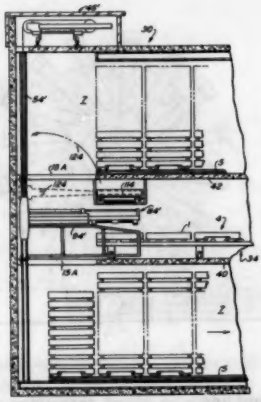
3,717,952
TOY VEHICLE
Ned Strongin, 1140 Broadway, New York, N.Y.
Filed Nov. 10, 1971, Ser. No. 197,247
Claims priority, application Great Britain, Nov. 25, 1970, 56,066/70
Int. Cl. A63h *33/26, 17/36*
U.S. Cl. 46—244 D **6 Claims**



A toy vehicle such as an automobile, driven by an electric motor and having wheels which are steered as the vehicle

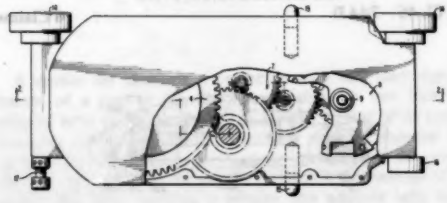
moves, the steering being programmed by a control member carried by the vehicle and driven by the motor.

3,717,953
APPARATUS FOR CULTIVATING PLANTS
Jorg Kuhn, Alpsteinstrasse 56, Herisau, Sweden, and Elmar Sohm, Voralberg, Lauterach, Austria
Continuation-in-part of Ser. No. 4,918, Jan. 22, 1970, abandoned. This application Nov. 10, 1971, Ser. No. 197,432
Int. Cl. A01g *1/04*
U.S. Cl. 47—1.1 **18 Claims**



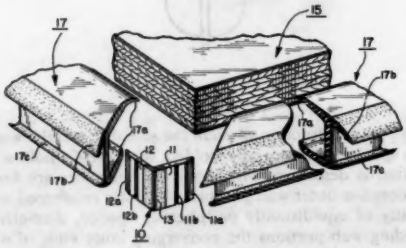
This invention relates to apparatus for cultivating plants such as mushrooms. The plants are positioned in receptacles stacked on one another and located in air-conditioned chambers. Each receptacle is individually subjected to preconditioned air having a short distance of travel defined by channels between adjacent receptacles. An elevating means and a horizontally movable processing line are arranged for processing receptacles from a plurality of said chambers which are disposed parallel to one another.

3,717,954
MOTOR DRIVEN OPERATING MECHANISM FOR REVOLVING DOORS
Amuel E. Sheckells, R. R. No. 3 Heckel Road, P.O. Box 77A, Evansville, Ind.
Filed Oct. 20, 1971, Ser. No. 190,716
Int. Cl. E05d *15/02*
U.S. Cl. 49—43 **13 Claims**



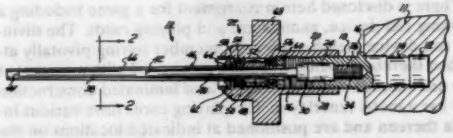
A motor driven revolving door operating mechanism including a main gear connected to the revolving door shaft, a centrifugal brake assembly, a gear train assembly connected between the main gear and centrifugal brake assembly and a drive motor connected to the gear train assembly, the motor being disposed in the same horizontal plane as the main gear; the main gear, centrifugal brake assembly, gear train assembly and motor all being positioned within a housing in spaced, parallel, closely adjacent horizontal planes to thereby form a low-profile motor driven operating mechanism adapted for selective installation in either an overhead or floor-type revolving door installation.

3,717,955
PANEL SEAL
Burton Alfred Urbanick, La Grange, Ill., assignor to Met-L-Wood Corporation, Chicago, Ill.
Filed Jan. 10, 1972, Ser. No. 216,579
Int. Cl. E06b *7/23*
U.S. Cl. 49—488 **11 Claims**



An expansion joint cover for a door panel assembly is disclosed. A gasketing having a U-shaped channel portion composed of a relatively rigid plastic-like material is secured to the perimeter of a door panel. Intersecting segments of the gasket along adjacent edges of the panel form joints whereat the cover members are applied. The expansion joint cover is an L-shaped sheet-like plastic member with each leg of the L composed of a relatively rigid material and the bight portion composed of a relatively flexible material. Each leg is ultrasonically welded to the base of the channel portion of respective ones of a pair of intersecting gasket segments to securely retain the segments in their assembled location while the flexible material overlying the joint accommodates normal expansion and contraction. Other features are disclosed.

3,717,956
EXPANDING LAP ARBOR
Albert B. Keatts, 20978 Knapp Street, Chatsworth, Calif.
Filed Dec. 11, 1970, Ser. No. 97,249
Int. Cl. B24b *25/00, 27/00, 9/02*
U.S. Cl. 51—1 **4 Claims**



An expanding lap arbor which is composed of a pair of telescoped tapered members, which are longitudinally mova-

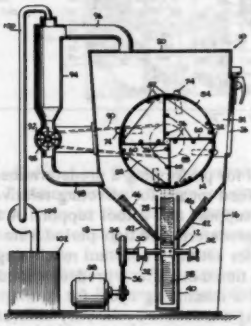
ble relative to each other; the tapered outer member is slit longitudinally and is longitudinally slidable along the tapered inner member by means of a hand wheel so that upon rotation of the hand wheel the outer member will be longitudinally displaced along the tapered inner member thereby expanding the outer member due to its slotted construction at a calibrated amount predetermined for each complete rotation of the hand wheel.

3,717,957

TUMBLING OF WORKPIECES

Helen H. Walker, 607 Charlton Street, Valdosta, Ga.

Continuation-in-part of Ser. No. 37,737, May 15, 1970, abandoned.
Filed May 10, 1971, Ser. No. 141,716
Int. Cl. B24c *3/30*
U.S. Cl. 51—9 **20 Claims**



A shot blasting apparatus in which abrasive shot is impelled at workpieces held for tumbling action within a rotating container of perforate outer wall construction and having perforate internal wall construction dividing the interior of the container into sectors allowing separate tumbling of different types of workpieces. One embodiment shows arrangements for conveniently changing compartment arrangements within the container.

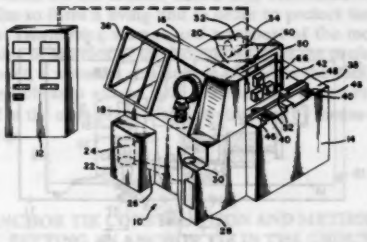
3,717,958

MACHINE FOR LAPPING GEARS

Charles G. Ellwanger, and Harry Pedersen, both of Rochester, N.Y., assignors to The Gleason Works, Rochester, N.Y.

Filed Dec. 16, 1970, Ser. No. 98,512
Int. Cl. B24b *37/00*
U.S. Cl. 51—26 **33 Claims**

A and machine for lapping hypoid gear pairs by a new method to provide improved tooth engagement characteristics, resulting in good sound qualities over a remarkably increased range of pinion axial adjustment in assembly. The method employs a plurality of special lapping cycles acting on the periphery of the gear teeth to achieve full control of tooth surface mismatch. The lapping machine controls backlash settings, set-overs, and all lapping motions with only three actuators, carries out the new method and achieves a versatility of lapping control far exceeding that available in prior art machines. A control panel provides an array of thumbwheel switches, graduated dials and selector switches for rapid entry of all lapping cycle control data, i.e., backlash, lapping motions and motion rates, number of passes, speeds and torques, all of these parameters being controlled independently for both forward and reverse sides of the teeth. The control panel also permits ready selection of alternative lapping methods including conventional one-cycle lapping methods as well as the novel multi-cycle methods disclosed herein. Stepping motors, responsive to data entered into the control panel, operate linear actuators to displace the gear spindle for effecting all lapping motions and relative gear-to-pinion displacements. The machine is designed with a vertically oriented pinion spindle to reduce floor space and to facilitate adaptation to full automation and is also designed with all relative lapping motions being accomplished by movement of the gear spindle on a unique support structure specially designed to simplify machine control functions.

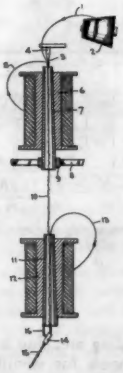


3,717,959

PROCESS FOR PRODUCING FANCY EFFECT YARNS

Remy Chatin, Chavanoz, France, assignor to Moulinage Et Retorderic De Chavanoz, Chavanoz, France

Filed Feb. 10, 1971, Ser. No. 114,185
Int. Cl. D02g *3/34*
U.S. Cl. 57—160 **7 Claims**

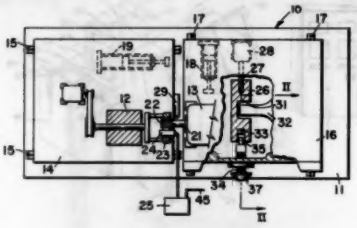


An improved process and product obtained thereby for the production of fancy effect yarns such as chenille yarns, boucle or loop yarns, flame or flake yarns, etc., which comprises overfeeding at least one effect yarn in relation to at least one core yarn, twisting the effect and core yarns to form an intermediate yarn, twisting the intermediate yarn prior to the blocking of the twist, binding the intermediate yarn with a binding yarn upon the blocking of the twist to form a fancy yarn and taking up the fancy yarn.

3,717,960
GRINDING MACHINE

Martin L. Kuniholm, Worcester, Mass., assignor to The Heald Machine Company, Worcester, Mass.

Continuation of Ser. No. 846,900, Aug. 1, 1969, abandoned.
This application June 28, 1971, Ser. No. 157,693
Int. Cl. B24b 51/00
U.S. Cl. 51—165.9 2 Claims

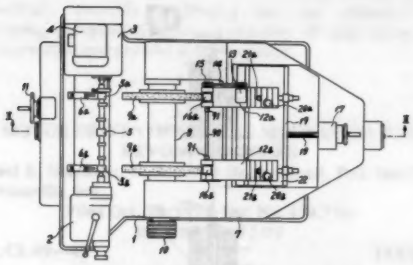


This invention relates to a grinding machine and, more particularly, to apparatus for forming a surface of revolution by the abrasive process, wherein the force between the wheel and workpiece is closely controlled.

3,717,961
MULTI-WHEEL GRINDING MACHINE

Isao Suzuki, Okazaki, Japan, assignor to Toyoda Kodi Kabushiki Kaisha, Kariya-shi, Japan

Filed March 11, 1971, Ser. No. 123,215
Claims priority, application Japan, March 11, 1970, 45/20716
Int. Cl. B24b 49/02
U.S. Cl. 51—165.88 10 Claims

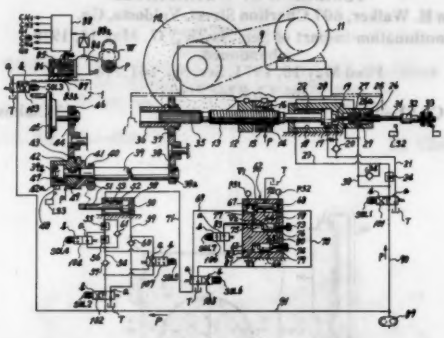


A multi-wheel grinding machine is provided having a plurality of grinding wheels for simultaneously performing a grinding operation on a plurality of portions of a workpiece. A separate dressing head corresponding to each grinding wheel is provided for respectively dressing the several grinding wheels in a controlled manner. Thus, when a difference between the diameters of the respective portions being ground on the workpiece as sensed by automatic sizing devices provided for this purpose is determined to be outside a predetermined limit, the infeed movement of the wheel slide carrying the grinding wheels is stopped and the dressing heads are respectively advanced for dressing the grinding wheels unevenly to eliminate this difference, whereby the plurality of portions of the workpiece may be effectively ground to the same diameter.

3,717,962
MACHINE TOOL WITH TIME CONTROL DEVICE

Takeshi Kusakabe; Makoto Kikuchi, both of Kariya, and Isao Suzuki, Okazaki, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Japan

Filed July 29, 1971, Ser. No. 167,117
Claims priority, application Japan, July 31, 1970, 45/67570
Int. Cl. B24b 49/04
U.S. Cl. 51—165.91 14 Claims



A machine tool for performing a predetermined machining cycle includes a feed means for effecting relative movement between a work support and a tool support. A first timer is timed out after a predetermined time period from the start of a machining cycle for setting a constant machining cycle time. A second timer is timed out after a predetermined time period from the start of a machining cycle for setting at least one check point during a machine cycle. Any difference between the predetermined machining cycle and an actual machining cycle is detected at the check point. The actual machining cycle is then compensated to perform the predetermined machining cycle.

3,717,963
METER HOUSING

John T. Sauriol, Dallas, Tex., assignor to Intercontinental Plastics Manufacturing, Dallas, Tex.

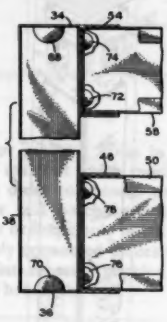
Filed March 5, 1971, Ser. No. 121,480
Int. Cl. E02d 29/08
U.S. Cl. 52—19 3 Claims

A water meter housing and cover has a body portion of generally frustoconical shape. The top of the body member has a recessed flange therein for receiving a cover. The cover has a downwardly extending ring integral therewith for reinforcement. The body has vertical slots running from the bottom portion thereof extending upwardly less than the height of the body. The exterior of the body further has peripheral reinforcing stabilizing rings integral therewith.

3,717,964
MODULE FRAMES

Victor E. Brown; Raul L. Mora, both of Fort Lauderdale, and Evans T. Morton, Pompano Beach, all of Fla., assignors to Behring Corporation, Ft. Lauderdale, Fla.

Filed July 9, 1970, Ser. No. 53,502
Int. Cl. E04b 1/34
U.S. Cl. 52—79 5 Claims

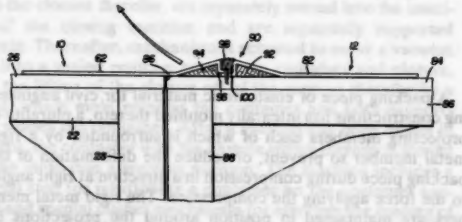


The method of making frames and frame units for modules of modular buildings includes steps of punching perimeter beams to form stops on the beams where cross-beams are to be located, and assembling the cross-beams with a pair of the perimeter beams by butting the ends of the cross-beams against corresponding stops to position the cross-beams without using jigs or fixtures to establish their positions. Retainers may be formed in the perimeter beams next to the stops to temporarily retain the cross-beams in place until they are welded to the perimter beams. In some frame units, the perimeter beams and cross-beams are metal channels, and the beams are assembled flange-to-flange and web-to-web. One weld is made to connect each abutting pair of flanges next to the webs, and another weld is made at a point separated farther from the webs so that the webs reinforce each other and the flanges reinforce each other. Cross-beams may also be welded to the stops on the perimeter beams. The invention includes the frame units, part of the strength and load handling capabilities of which are derived from particular arrangements of stops and welds.

3,717,965
ROOF SEALING OF MODULES

Evans T. Morton, Pompano Beach, and Kimbel L. Vescio, Fort Lauderdale, both of Fla., assignors to Behring Corporation, Fort Lauderdale, Fla.

Filed April 16, 1971, Ser. No. 134,624
Int. Cl. E04b 1/348
U.S. Cl. 52—79 5 Claims

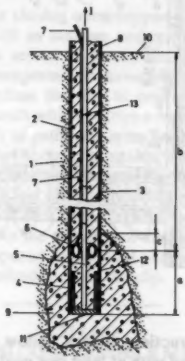


In a modular building having modules abutting each other to form a living unit, the roofing for the modules is sealed by providing a receptacle on the roof of one of the modules adjacent to the juncture between two modules, overlapping roof membranes within the receptacle, sealing the overlapping joint of the membranes within the receptacle with sealing cement in the receptacle, and sealing the roof membranes at edges of the modules. In a preferred embodiment, the modules have an opening in a wall next to the roof, and this opening is sealed by a waterproof sheet which is affixed to the roof and extends from the roof over the wall opening. This sealing sheet is provided on the module before it is assembled with other modules to form a living unit in order to protect the module against rain during storage and transport of the module. At one edge of the roof of the module which is the preferred embodiment, a mansard structure is affixed to the roof, and the roof membranes extend over the mansard structure and are sealed at the edge of the mansard structure by means of a sealing strip.

3,717,966
ANCHOR TIE CONSTRUCTION AND METHOD OF SETTING AN ANCHOR TIE IN THE GROUND

Ernst Reichert, Poring, Germany, assignor to Stump Bohr AG, Zurich, Switzerland

Filed Jan. 26, 1971, Ser. No. 109,776
Claims priority, application Germany, Jan. 30, 1970, P 20 04 270.0
Int. Cl. E02d 5/80
U.S. Cl. 52—127 9 Claims



A method of setting an anchor tie in the ground, the anchor tie comprising an anchor body and a rod or bar connected to the anchor body and extending to above ground level. The anchor tie is placed in a bore hole traversing the ground and settable material, such as concrete, is introduced into the bore hole to surround the anchor body and the adjacent portion of the rod. In accordance with the invention, the settable material surrounding the rod adjacent the anchor body is displaced from the settable material in the region of the anchor body by introducing a pressure medium between the respective regions. This may be accomplished by surrounding the rod adjacent the anchor body with an inflatable elastic annular tube or bag into which pressure medium, such as water, is forced after the settable material has been poured but before it has set.

Considered from another aspect, the invention provides for an anchor tie construction wherein the anchor body proper is set in the ground, surrounded by a set mass of material, such as concrete, the rod extending from the anchor body being spaced from the set mass in the region adjacent the anchor body by an inflated annular bag or tube surrounding the rod means.

Considered from a still further aspect, the invention provides for a testing method for determining the resistance to pulling force of an anchor tie construction set in the ground. According to the method, a pressure medium containing bag or tube surrounds the rod adjacent the anchor tie body proper. Communication to ground level is established with the pressure medium containing bag or tube, for example by a pipe or conduit extending from the bag to above ground level. A pulling or drawing force is then exerted on the rod. If the anchor tie is dislodged by this force, it will press against the pressure medium containing bag, thereby causing pressure medium to be forced through the conduit towards ground level. By contrast, if the anchor tie withstands the pulling force, no pressure medium will reach ground level.

3,717,967

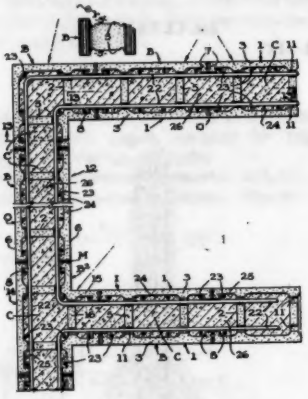
BLOCK AND BUIDLING CONSTRUCTION USING SAME

Paul A. Wood, 3215 Franklin Rd., S.W., Roanoke, Va.

Filed Jan. 6, 1972, Ser. No. 215,766

Int. Cl. E04b *1/16, 2/26*

U.S. Cl. 52—259 **8 Claims**



A building construction utilizes hollow modular masonry blocks, each provided with at least one centrally disposed full-size cavity and one half-size cavity as defined by cross webs joining a pair of parallel sidewalls. The sidewalls terminate, at least at one end, in freely projecting extensions each having a distal inturned end flange adapted to laterally abut a similar construction of an adjacent block. The shoulder as provided behind each end flange serves to position and retain full-length vertically installed reinforcing bars through unobstructed vertically aligned cavities in the successive courses of the blocks from floor to floor while recesses in the top of each web receive horizontal reinforcing elements and permit the communication of a filler of concrete both horizontally and vertically throughout the wall.

3,717,968

SURFACE-MOUNTED WALL GUARDS

Robert W. Olsen, Chatham Borough, N.J., and Richard E. Herrick, Escondido, Calif., assignors to Construction Specialties, Inc., Cranford, N.J.

Filed July 16, 1970, Ser. No. 55,491

Int. Cl. E04b *5/00, 7/00*

U.S. Cl. 52—288 **2 Claims**

A wall guard for protecting wall corners or other wall areas subject to abuse including an elongate resilient strip to be mounted directly upon completed wall surfaces. The elongate strip includes a central portion conforming generally to the wall area to be protected, the central portion being supported in spaced relation to the underlying wall surface. The strip includes inturned edges defining concealed channels near the edges which receive retainers mounted upon the protected wall portion. The retainers, which include portions extending

into the channels, are entirely masked by the protective strip to give a clean, neat appearance. The retainers may conform to the underlying wall section, as by forming the retainers for extension about a wall corner, in which case the retainers afford easy alignment of the strip and protected wall area. At the ends of the strip, a combined retainer and cap engages the strip to close the space defined between the strip and wall.

3,717,969

PACKING PIECE FOR CIVIL ENGINEERING WORKS

Etienne-Thomas Sequaris, Andrimont, Belgium, assignor to Helka S. A., Fribourg, Switzerland

Filed June 15, 1970, Ser. No. 46,298

Claims priority, application Switzerland, June 20, 1969, 9431/69

Int. Cl. E01c *11/10*; E04f *15/14*

U.S. Cl. 52—396 **17 Claims**

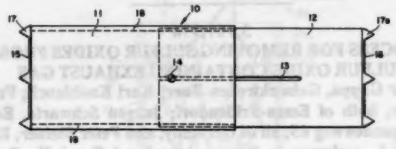
A packing piece of elastomeric material for civil engineering constructions has integrally moulded thereto, a plurality of projecting members each of which is surrounded by a rigid metal member to prevent, or reduce the deformation of the packing piece during compression in a direction at right angles to the force applying the compression. The rigid metal members are maintained in position around the projections by means of washers and wood screws which are threaded into the free ends of the projections.

3,717,970

WALLBOARD REPAIR DEVICE

William J. Rosenblum, Route 1, P.O. Box 108, Carthage, Tex.

Filed July 7, 1970, Ser. No. 52,918
Int. Cl. E02d 37/00
U.S. Cl. 52—514 5 Claims



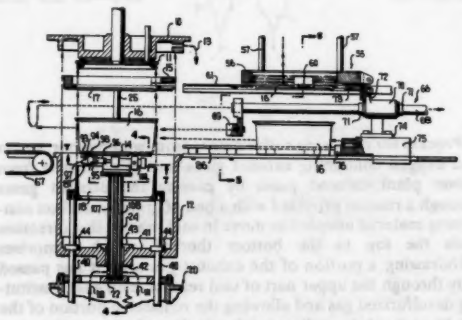
A repair device for patching holes in wallboard, plaster walls and other wall material which require plaster or composition materials in order to become patched. The device provides support for said patching materials and can be adapted to fit any size or shape hole which occurs. The device comprises two slidably connected pieces that can be locked together to form a flat, recessed backing support that is inserted into a trimmed hole in the wall.

3,717,971

MACHINE FOR POSITIONING A FLEXIBLE CONTAINER FOR SEAMING

Dietrich K. Naggert, Calumet, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,305
Int. Cl. B65b 31/02
U.S. Cl. 53—89 14 Claims



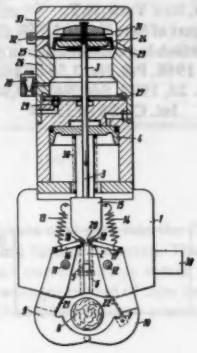
This disclosure relates to an adaptation of a conventional vacuum closing machine for closing flexible containers. A flexible container, such as a ham can, is filled with the product and delivered to the closing machine. The container, together with the closure therefor, are separately moved into the interior of the closing machine and are separately supported therein. Thereafter, mechanism is actuated to move a vacuum pot into a sealed position around the container and closure, and the lifting of the closure off of the support therefor by a mold, which mold receives the container and both supports and shapes the container. After a vacuum has been drawn in the pot, the container with the closure sitting thereon is moved by the mold into a seaming position. The machine includes a special stop for positioning a container on the container support and special pusher mechanism for effecting the feeding of containers and closures to the machine and for discharging closed containers from the machine.

3,717,972

APPARATUS FOR CLOSING OPEN-TOPPED FLEXIBLE CONTAINERS

Herbert Niedecker, Am Ellerhang 6, 6243 Falkonstein (Taunus), Germany

Filed Feb. 22, 1971, Ser. No. 117,570
Claims priority, application Germany, Feb. 28, 1970, P 20 09 541.4; Sept. 12, 1970, P 20 45 229.3
Int. Cl. B65b 51/04
U.S. Cl. 53—138 A 11 Claims



In an apparatus for closing open-topped containers made of flexible material, such as sausage casings, displacement of a single drive element serves to flatten the mouth of the container and then to compress it transversely, surround it with a U-shaped clip and close the clip to seal the container. The drive element is a punch which carries a cam whose advancing contour causes a pair of gathering arms surrounding the top of said container to pivot about pins against the action of springs and thereby flatten the container top. Further advance of the punch carries the clip and ultimately closes it.

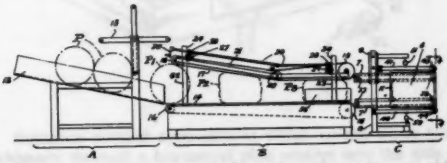
Braking means such as a piston-cylinder or springs may be provided to slow down the advance of the punch during a part of the stroke as compared to the final part of the stroke when the full velocity is desired to close the clip.

3,717,973

PACKAGING COMPRESSIBLE MATERIAL

William A. Brady, Jr., Norristown, Pa., assignor to Certain-Teed Saint Gobain Insulation Corporation, Valley Forge, Pa.

Filed Jan. 8, 1971, Ser. No. 104,906
Int. Cl. B65b 63/02
U.S. Cl. 53—124 E 7 Claims



A charge or batch of compressible material is first compressed and is then advanced into the interior of a packaging enclosure, such as a package wrapper, while the wrapper is supported in distended condition. The wrapper has an inside dimension smaller than the charge of compressible material to be inserted prior to compression thereof but larger than the

compressed charge. After advancement of the compressed charge into the interior of the wrapper, both the wrapper and the charge are delivered from the apparatus at the same rate, and concurrently the compression is released so that the package is completed as the wrapper and charge are being delivered from the apparatus.

3,717,974

SELECTIVE ADSORPTION PROCESS FOR AIR SEPARATION

Louis Bela Batta, Grand Island, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 103,768, Jan. 4, 1971, Pat. No. 3,636,679, which is a continuation-in-part of Ser. No. 787,847, Dec. 30, 1968, Pat. No. 3,564,816. This application Jan. 24, 1972, Ser. No. 219,942

Int. Cl. B01d *53/04*

U.S. Cl. 55—58 5 Claims

Air is separated by selective adsorption of nitrogen in a high performance adiabatic pressure swing process using zeolitic molecular sieve adsorbent by returning at least four times as much oxygen to the absorbent as is introduced in the feed air.

3,717,975

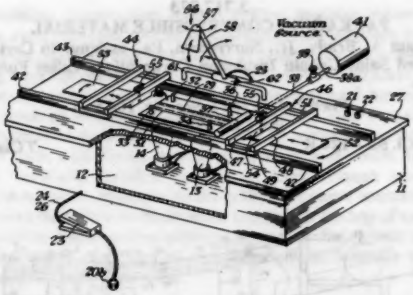
APPARATUS FOR CORRECTING PRINTING ERRORS

Donald W. Bloom, Sr., R.D. No. 8, Box 337, Greensburg, Pa.

Filed July 2, 1971, Ser. No. 159,183

Int. Cl. G03b *27/04*

U.S. Cl. 355—78 6 Claims



This invention relates to a photo correction apparatus that employs a light chamber and a pair of slidable masks with a light in the base of the chamber to facilitate the registration of a print having need of corrections with a film having the needed corrections thereon. The slidable masks are so positioned as to allow the exposure of selected correct lines on the original, while obliterating the incorrect lines. The apparatus may then have a film print with corrections thereon positioned in registration over the then partially exposed film to allow the slidable masks to be moved to position corrected portions of the film, which are then in turn exposed to a light source so that the finished fully exposed film is corrected. The apparatus also includes a safety light that is housed in the light chamber, which light source has a color that will not expose the film to be exposed to the exposure light source. This aids the user in determining whether registration has been maintained.

3,717,976

PROCESS FOR REMOVING SULFUR OXIDES FROM SULFUR OXIDE CONTAINING EXHAUST GAS

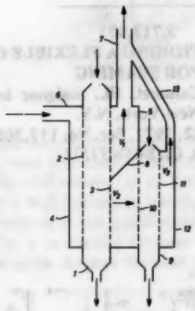
Gunther Gappa, Gelsenkirchen-Buer; Karl Knoblauch; Franz Maier, both of Essen-Frillendorf; Jurgen Schwarte, Essen Adelgundenweg 65; all of Germany, and Peter Steiner, Edison, N.J., assignors to Bergwerksverband G.m.b.H., Essen, Germany

Filed Oct. 22, 1971, Ser. No. 191,622

Claims priority, application Germany, Aug. 17, 1971, P 21 41 075.3

Int. Cl. B01d *53/06*

U.S. Cl. 55—73 5 Claims



Process for removing sulfur oxides from water vapor, steam and oxygen containing exhaust gases and in particular from power plant exhaust gases by passing the exhaust gases through a reactor provided with a bed of granular carbon containing material adapted to move in said reactor in a direction from the top to the bottom thereof, which comprises withdrawing a portion of the exhaust gas after it has passed only through the upper part of said reactor, said gas constituting desulfurized gas and allowing the remaining portion of the gas to pass substantially completely through the moving carbon containing granulate bed into the bottom part of said reactor, withdrawing this remaining part of the gas from the bottom part of said reactor and subjecting the same to a further desulfurization treatment.

3,717,977

SMOKE POLLUTANT CONCENTRATOR

Charles W. Stone, New Philadelphia, Ohio, assignor to William J. Freeman and Reese Taylor, Akron, Ohio, part interest to each

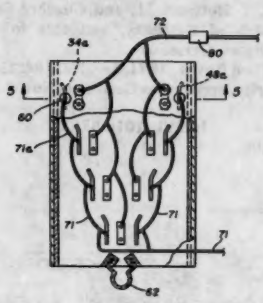
Continuation-in-part of Ser. No. 731,906, May 24, 1968, abandoned, which is a continuation-in-part of Ser. No. 501,678, Oct. 22, 1965, abandoned. This application April 5, 1971, Ser. No. 131,032

Int. Cl. B03c *3/04*

U.S. Cl. 55—110 2 Claims

An improved type of air pollution control device wherein micro-particles of a size incapable of normally being picked

up by a conventional electrostatic precipitator are agglomerated by the use of an unbalanced and intermittent electrostatic field which agglomerates them to sufficient size to facilitate removal. In addition to agglomerating particles the attracting electrodes are arranged in a uniquely spaced arrangement of zones so that a progressive cleaning action occurs during movement of the gaseous medium through the unit to thus, in effect, achieve self-cleaning without the need for shutdown which would otherwise be required.



3,717,978

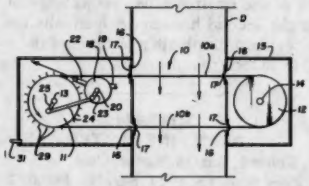
AIF FILTER SYSTEM

Edwin F. Osborne, Jr., 402 Ripple Creek, Houston, Tex. 77024

Filed July 9, 1971, Ser. No. 161,083

Int. Cl. B01d *46/18*

U.S. Cl. 55—242 **10 Claims**



A system for filtering and cleaning air or gas streams, wherein an endless foraminous belt is trained over spaced-apart rollers, including a drive roller having bristle-type belt-engaging elements and is moved across the path of flow of an air or gas stream by means of a water-driven turbine having its drive shaft connected to the drive roller and having its water exhaust stream directed to effect washing of particulate matter from the belt.

3,717,979

ANTI-POLUTION DEVICE

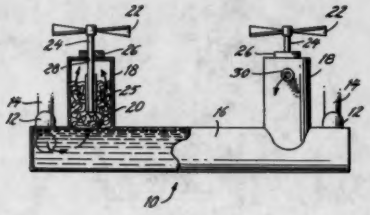
Ernest Waters, Philadelphia, Pa., assignor to Louis J. Gagliardi, a part interest

Filed May 3, 1971, Ser. No. 139,592

Int. Cl. B01d *47/02*

U.S. Cl. 55—233 **4 Claims**

An anti-polution device having a horizontal, cylindrical water filled housing connected to a pair of automotive exhaust pipes and to a pair of vertical cylindrical tubes each containing a filter medium and a propeller attached to a vertical rod passing into said filter medium. Each vertical cylindrical tube has a horizontal exhaust tube for expelling the remaining minute impurities. The exhaust fumes pass into the water filled housing and some of the impurities are removed. The partially cleaned exhaust fumes next pass into the filter medium of the vertical rods and are further cleansed. The propeller which is actuated by the air currents helps retain these fumes in the filter medium for a longer period of time before allowing same to pass out the exhaust tubes house causing greater cleansing of the fumes.



3,717,980

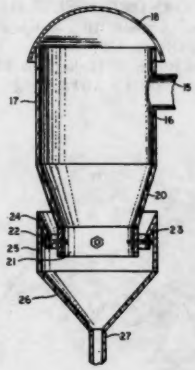
POLLUTION CONTROL APPARATUS

Antonios Papastavrou, 2300 W. Chicago Avenue, Chicago, Ill.

Filed April 27, 1970, Ser. No. 32,318

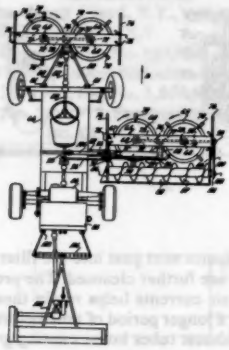
Int. Cl. B01d *45/00*

U.S. Cl. 55—461 **2 Claims**



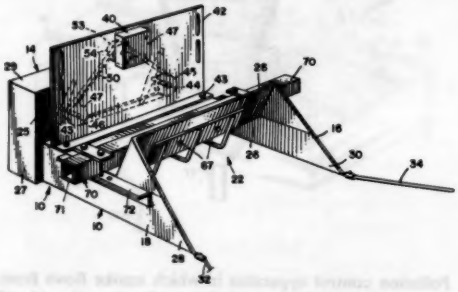
Pollution control apparatus in which smoke flows from a chimney through a horizontal pipe section into the side of a generally tubular structure closed at its upper end, thence downwardly through a convergent section and thence upwardly through an exit opening in surrounding relation to the convergent section. A funnel-shaped structure is positioned below the convergent section to receive and direct downwardly traveling particulate matter into the upper end of a relatively thin vertical pipe the lower end of which is coupled to a collection chamber near ground level.

3,717,981
MOWING MACHINES
Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland
Continuation of Ser. No. 778,444, Nov. 25, 1968, abandoned.
This application Aug. 11, 1970, Ser. No. 62,998
Claims priority, application Netherlands, Dec. 4, 1967, 6716443
Int. Cl. A01d 75/30
U.S. Cl. 56—6 9 Claims



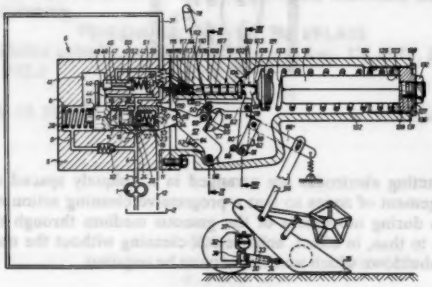
According to this invention, at least one mowing mechanism is mounted on a mobile frame, and the mowing mechanism has a frame beam which extends transverse to the intended direction of travel during use of the machine. The frame beam is spaced from the cutting elements with the mowing mechanism having a single support which is located approximately centrally along the frame beam. The frame beam is pivotable about an axis afforded by said support during use of the machine to match ground undulations.

3,717,982
CORN DETASSELER HEAD
Elmo R. Meiners, Anchor, Ill., assignor to M & W Gear Company, Inc., Gibson City, Ill.
Filed July 6, 1971, Ser. No. 159,645
Int. Cl. A01d 45/02
U.S. Cl. 56—63 5 Claims



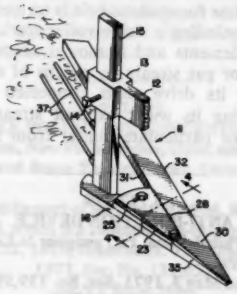
An improved corn detasseler head unit for mounting on a corn detasseling machine. The head unit includes an open sided conduit or channel for bending and aligning cornstalks with tassels thereon. Cutter blades are disposed at one end of the conduit to sever the tassel from the cornstalks as they pass through the conduit. The improvement comprises a plurality of guide members positioned in the bottom open side of the conduit to guide the cornstalks toward the cutter blades while preventing leaves on the cornstalk from being cut by the cutter blades.

3,717,983
CONTROL APPARATUS FOR A HARVESTING MACHINE
Werner Reitz, 7 Stuttgart 31, and Gunther Schwerin, 7012 Fellbach, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Nov. 1, 1971, Ser. No. 194,225
Claims priority, application Germany, Nov. 2, 1970, P 20 53 815.2
Int. Cl. A01d 67/00
U.S. Cl. 56—208 13 Claims



A control apparatus for lifting and lowering the mowing platform of a harvesting machine having a first housing for a control valve controlling the flow of pressure fluid from a pump into working conduits for the hydraulic lifting motor of the platform and a second housing attached to the first housing, and enveloping the cylinder of a pressure-responsive piston, a location-representing linkage connected with the nowing platform, and a regulator controlled by the pressure-responsive piston and by the location-representing linkage to operate the control valve by a part acting on a control valve slide portion of the control valve, projecting out of the first housing into the second housing. A manually operated lever controls the regulator to obtain a position of the mowing platform spaced from the ground.

3,717,984
BEAN VINE CUTTER
Roy Wright, Route 2, Box 38, Boone, Colo.
Filed Sept. 13, 1971, Ser. No. 180,002
Int. Cl. A01d 55/00
U.S. Cl. 56—229 4 Claims



A bean vine cutter is disclosed wherein a vertical bar is capable of being attached to a drawing vehicle such as a trac-

tor. The bean vine cutter of the present invention is attached to the bottom portion of said bar. The bean vine cutter includes an elongated cutting knife having a forward portion with a triangular configuration and of decreasing thickness towards the front. The cutting knife is secured to a triangular plate which in turn overlies a triangular portion of a plate having a tail end. The tail end is secured to the bar. The bar also has a plurality of parallelly disposed rods extending rearwardly as a means for guiding the cut vines.

3,717,985
MOWER BLADE

Abraham L. Freedlander, Dayton, Ohio, and Wayne C. Garrett and Robert E. Matthews, Waynesville, N.C., assignors to Dayco Corporation, Dayton, Ohio

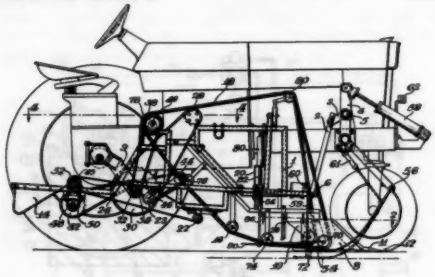
Filed Aug. 21, 1968, Ser. No. 754,433
The portion of the term of the patent subsequent to Apr. 29, 1986, has been disclaimed
Int. Cl. A01d *55/18*
U.S. Cl. 56—295 3 Claims

A flexible mower blade having cutting arms formed of an elastomeric material such as urethane and having a rigid insert within each arm terminating short of the cutting edges. The arms are secured to a rigid member which is mounted on the lawn mower shaft.

3,717,986
ASPARAGUS HARVESTER

Lewis E. Lawson, LaSueur, Minn., assignor to Green Giant Company, LeSueur, Minn.

Filed Jan. 17, 1966, Ser. No. 521,021
Int. Cl. A01d *45/00*
U.S. Cl. 56—327 A 3 Claims



Apparatus for harvesting asparagus. A movable frame has cutting means mounted thereon for severing asparagus spears of a selected height as the frame travels in an asparagus field. A pair of cooperating endless belts are provided for gripping, firmly and gently, the selected asparagus spears from their opposite sides, taken relative to the direction of travel of the frame. The gripping of the spears by the endless belts occurs before, during, and after the cutting means severs the said spears.

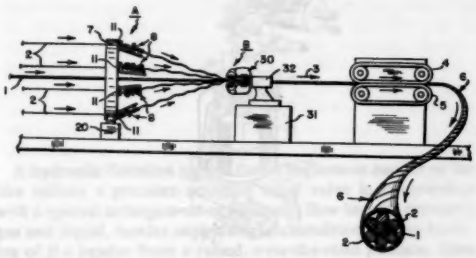
ERRATUM

For Class 57—160 see:
Patent No. 3,717,959

3,717,987
FLAT WIRE STRUCTURE AND APPARATUS AND METHOD OF MAKING SAME

William J. Gilmore, and Lilburn L. Mesler, both of Bridgeport, Conn., assignors to American Chain & Cable Company, Inc., New York, N.Y.

Filed March 27, 1970, Ser. No. 23,433
Int. Cl. D07b *1/08, 5/10*
U.S. Cl. 57—9 16 Claims

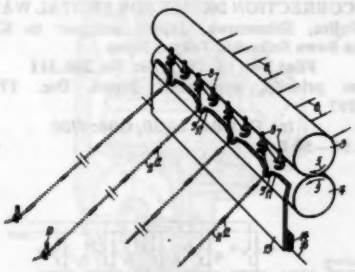


A multi-wire structure comprising an inner core member and one or more strips of flat wire wrapped helically about the core member. Each flat wire is helically twisted about its longitudinal axis by forming means to permanently deform it prior to being wrapped about the core member.

3,717,988
FORMATION OF TWISTED THREAD ASSEMBLIES

Gordon William Walls, Victoria, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australian Capitol Territory, Australia

Filed Feb. 9, 1971, Ser. No. 114,016
Claims priority, application Australia, Feb. 9, 1970, PA 0281/70
Int. Cl. D01h *7/92*
U.S. Cl. 57—34 AT 5 Claims

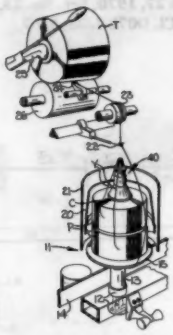


Apparatus for forming a twisted-thread assembly comprising strand twisting means to impart to a strand alternating zones of opposite twist and strand convergence means adjacent the twisting means to converge the twisted strand with another strand to enable the strands to twist ply together thereby to form a twisted-thread assembly. A surface engages the strands after they leave the convergence means and in such a manner as to inhibit separation of the strands under ballooning forces generated by rotation of the strands as they twist ply together.

3,717,989
CARRIER FOR PACKAGES OF TEXTILE YARN

Werner Heimann, Krefeld-Forstwald, and Ulrich Lossa, Krefeld, both of Germany, assignors to Palitex Project Company GmbH, Krefeld, Germany

Filed April 15, 1971, Ser. No. 134,331
Claims priority, application Germany, April 29, 1970, G 70 16 214.0
Int. Cl. D01h 7/86; B65h 75/18
U.S. Cl. 57—58.52 8 Claims

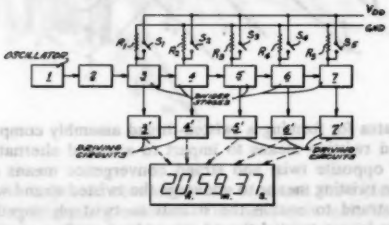


A carrier for packages of yarn wound on hollow, elongate cores having cooperating means at each end thereof for axially, detachably interlocking at least two cores together for providing superimposed packages of yarn for simultaneous or successive withdrawal of yarn therefrom for further processing. The carrier is particularly adaptable for inserting the yarn packages in and withdrawing the yarn packages from a spindle assembly having a basket mechanism of a textile yarn twister. The carrier comprises a generally elongate body portion, means on the body portion cooperating with the interlocking means on one end of the cores for axially, detachably interlocking the carrier with the interlocked yarn package cores, and means on the body portion for manually gripping and handling the carrier and interlocked yarn packages without touching the yarn for mounting and withdrawal of the yarn packages in a textile machine.

3,717,990
TIME CORRECTION DEVICE FOR DIGITAL WATCHES

Kinji Fujita, Shimosuwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 15, 1971, Ser. No. 208,311
Claims priority, application Japan, Dec. 17, 1970, 45/112397
Int. Cl. G04b 19/30; G04c 9/00
U.S. Cl. 58—50 R 9 Claims

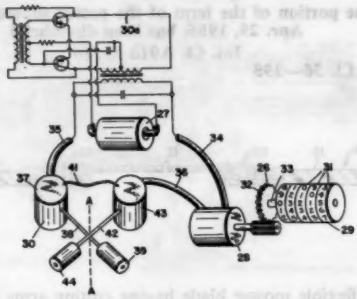


A time correction device for electronic watches having multi-stage divider circuitry for dividing the high frequency output signals of an oscillator into low frequency timing signals including a gate at the input of each divider stage to be corrected for selectively applying to said divider stage the output signal of the prior stage or the inverse of said prior stage output signal. A switch is provided for manually actuating the gate to pass one of the prior stage output signal and the inverse thereof.

3,717,991
IMPACT TIME INDICATOR

John Klar, Boylston, Mass., assignor to The Heald Machine Company, Worcestor, Mass.

Filed June 18, 1971, Ser. No. 154,682
Int. Cl. G04b 37/12; G04f 9/04
U.S. Cl. 58—152 R 8 Claims

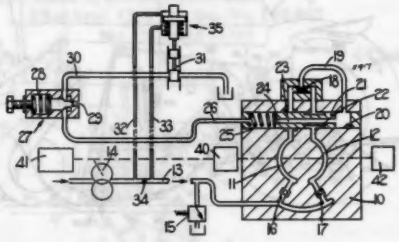


This invention relates to an impact time indicator and, more particularly, to apparatus for insertion in a container for shipping delicate devices to indicate the time when an accident takes place.

3,717,992
CONTROL ARRANGEMENT FOR HYDRAULIC TRANSMISSION SYSTEM

Leonard William Eyles, Ormskirk, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Dec. 1, 1970, Ser. No. 93,957
Int. Cl. F02b 41/00
U.S. Cl. 60—19 6 Claims



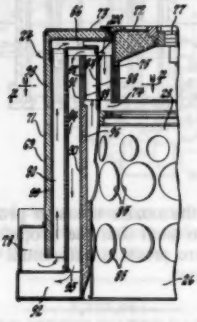
A hydraulic transmission system is provided with a by-pass relief valve between the pressure and return lines, with such relief valve being operable by a servo pressure. The servo pressure is controlled by a valve responsive to the fluid flow through a fixed displacement pump driven by an engine providing the input to the transmission system. Increase in engine speed above a predetermined level, due to an external torque applied to the output shaft of the transmission, operates the relief valve to by-pass the system.

3,717,993

PREHEATER ASSEMBLY FOR STIRLING ENGINE

Russell F. Potter, Lockport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 2, 1970, Ser. No. 85,959
Int. Cl. F02m 23/14
U.S. Cl. 60—24 1 Claim



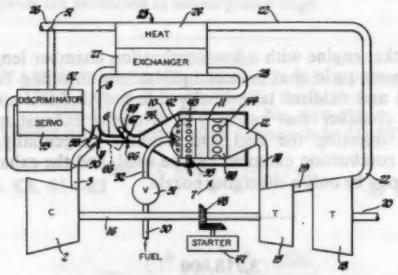
An air preheater for an external combustion engine which is supported around the engine cylinder to form a combustion chamber therebetween. Air enters the preheater inlet and flows through an annular flow passage in counter direction to the hot exhaust gas which flows through an abutting annular flow passage. The passages are separated by a thermally conductive wall. Insulation on the outer walls of the preheater prevents heat loss from intake air to atmosphere and an insulated divider wall separates the hot gas flow passage from the combustion chamber to prevent reheating of the exhaust gas.

3,717,994

GAS TURBINE SYSTEM WITH REGENERATOR BYPASS ONLY DURING STARTING

Jackson R. Templin, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 12, 1970, Ser. No. 88,903
Int. Cl. F02c 7/10
U.S. Cl. 60—39.51 R 5 Claims



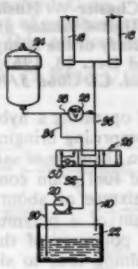
A regenerative gas turbine engine has the engine compressor connected to the engine combustion apparatus through a regenerator in normal operation of the engine so as to heat the air prior to combustion. During starting of the engine, the regenerator is by-passed so that the compressed air warmed by compression will not be cooled in the regenerator.

3,717,995

HYDRAULIC FLOTATION FOR IMPLEMENT HEADER

Cecil L. Case, Newton, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed Oct. 12, 1971, Ser. No. 188,296
Int. Cl. F15b 1/02
U.S. Cl. 60—470 7 Claims



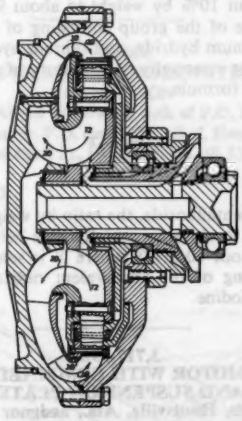
A hydraulic flotation system for an implement header or the like utilizes a pressure sensitive relief valve in cooperation with a special arrangement of hydraulic flow lines to prevent a gas and liquid, header-supporting accumulator, during lowering of the header from a raised, over-the-road position, from exhausting pressurized liquid below that level needed to support the header in a flotation condition at a preseleted, lowered operating position.

3,717,996

HYDRODYNAMIC TORQUE CONVERTERS

Karl Gustav Ahlen, Stockholm, Sweden, assignor to S.R.M. Hydromekanik AB, Stockholm-Vallingby, Sweden

Filed Aug. 13, 1971, Ser. No. 171,636
Claims priority, application Great Britain, Mar. 5, 1971, 6,155/71
Int. Cl. F16h 41/04
U.S. Cl. 60—327 26 Claims



This specification describes a hydrodynamic torque converter in which a ring of pump blades, a ring of guide blades and at least two rings of turbine blades are mounted in a toroidal working chamber. The invention enables different input torque characteristics to be obtained by varying the outlet angles of the blades of a turbine ring disposed to immediately precede the ring of pump blades. The outlets of the said turbine blades direct the fluid to

the inlet of the pump blades and, for a low input torque ratio, the outlet angle of the said turbine blades is such that the fluid is always directed in the same direction as the direction of rotation of the ring of pump blades.

3,717,997

METHOD FOR OPERATING HYBRID ENGINES

Orval E. Ayers and Chester W. Huskins, Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Dec. 23, 1963, Ser. No. 333,240
Int. Cl. C06d 5/10
U.S. Cl. 60—220 **8 Claims**

5. The method of operating a hybrid-fueled rocket engine, said method comprising bringing together and igniting in the combustion chamber of said engine a solid fuel and an oxidizer, said fuel grain consisting essentially of a cured, intimate mixture of about 10% by weight to about 95% by weight of a polymer selected from the group consisting of polymers of the hydrocarbon conjugated dienes containing four to six carbon atoms per molecule of diene, copolymers of the hydrocarbon conjugated dienes of four to six carbon atoms per molecule with each other, copolymers of the hydrocarbon conjugated dienes of four to six carbon atoms with 2,3-bis(difluoroamino)propyl acrylate, polymers of 2,3-bis(difluoroamino)propyl acrylate, polymers of the ethylenically unsaturated aliphatic hydrocarbon carboxylic acids of up to about eight carbon atoms, polymers of the lower alkyl esters of the ethylenically unsaturated aliphatic hydrocarbon carboxylic acids of up to about eight carbon atoms, copolymers of the ethylenically unsaturated aliphatic hydrocarbon carboxylic acids of up to eight carbon atoms with each other, copolymers of the ethylenically unsaturated aliphatic hydrcarbon carboxylic acids of up to eight carbon atoms with the lower alkyl esters of these acids, copolymers of the ethylenically unsaturated hydrocarbon carboxylic acids of up to about eight atoms with the hydrocarbon conjugated dienes of 4 to 6 carbon atoms, and copolymers of the lower alkyl esters of the ethylenically unsaturated aliphatic hydrocarbon carboxylic acids of up to about eight carbon atoms with the hydrocarbon conjugated dienes of 4 to 6 carbon atoms, and from about 10% by weight to about 90% by weight of at least one of the group consisting of powdered aluminum, aluminum hydride, and lithium hydride, said oxidizer consisting essentially of a mixture of a perhalogenyl fluoride of the formula

and chlorine pentafluoride, the ratio by weight of perhalogenyl fluoride to chlorine pentafluoride being from about 1.0:10.0 to about 10.0:1.0, where X is selected from the group consisting of the heptavalent radical of chlorine, bromine, and iodine.

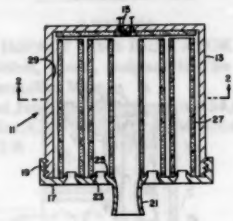
3,717,998

ROCKET MOTOR WITH COMBINED NOZZLE AND SUSPENSION PLATE

Robert E. Betts, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

Filed June 3, 1971, Ser. No. 149,432
Int. Cl. F02k 9/04
U.S. Cl. 60—255 **3 Claims**

A solid propellant rocket motor that has a nozzle-suspension plate which incorporates a grain trap as an integral part of the nozzle. The nozzle-suspension plate has a plurality of nozzles through which exhaust gases are expended. A central exhaust nozzle provides exhaust for outer burning surfaces of propellant grains within the rocket motor and each individual nozzle around the central nozzle provides an exhaust nozzle for the inner burning surface of a respective propellant grain. With



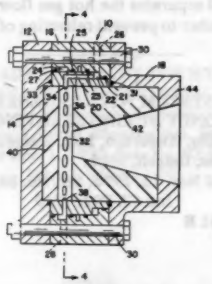
this arrangement, the nozzle areas to propellant burning surfaces are chosen such that the propellant grains have approximately a zero pressure differential across the grain at propellant burnout.

3,717,999

LOW L/D ROCKET ENGINE WITH TANGENTIAL-TANGENTIAL INJECTION

Ben F. Wilson, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

Filed Dec. 5, 1969, Ser. No. 885,393
Int. Cl. F02k 9/02
U.S. Cl. 60—258 **6 Claims**



A rocket engine with a low combustion chamber length to diameter ratio that is accomplished by injecting both the fuel and oxidizer tangentially into a cylindrical combustion chamber that has only a diverging exhaust nozzle. By injecting the fuel and oxidizer tangentially, a smaller combustion chamber can be used, and the exhaust nozzle may be only a diverging nozzle.

3,718,000

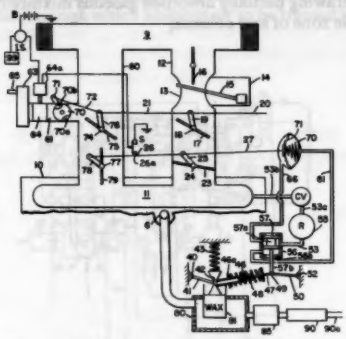
DUAL FUELED ENGINE WITH TEMPERATURE SWITCHOVER

Brooks Walker, 1280 Columbus Avenue, San Francisco, Calif.

Continuation-in-part of Ser. No. 17,167, March 6, 1970, abandoned. This application June 1, 1971, Ser. No. 148,545
Int. Cl. F02b 75/10
U.S. Cl. 60—285 **4 Claims**

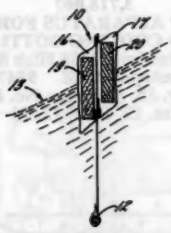
A duel fueled motor using a liquid fuel such as gasoline and a gaseous fuel such as LPG or pressurized natural gas with one or two exhaust treating devices in the exhaust system that

operate efficiently when above a selected temperature in treating exhaust from gasoline powered operation, a thermally



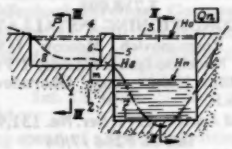
sensitive controlled changeover from gas to gasoline when the treater reaches a desired temperature and switches back to gas fuel when below a desired temperature.

3,718,001
WAVE RIDING WATER BARRIER
John D. Harper, P.O. Box 83, Route 1, Elgin, Ill.
Filed Feb. 17, 1971, Ser. No. 116,166
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **2 Claims**



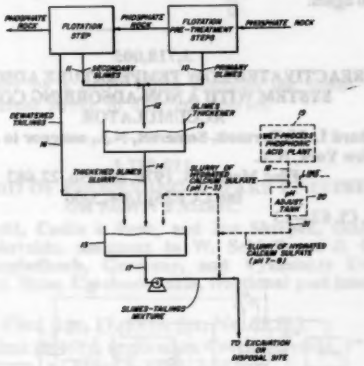
A floating barrier formed of flexible material having flexible buoyancy pockets on either side of the barrier fitted with float elements slightly smaller than the pockets so that the elements can move relatively in a vertical direction in response to wave action without moving or bending the barrier itself. The float elements are protected in sealed plastic bags.

3,718,002
MOVABLE DAM AND METHOD OF OPERATION
Jean Aubert, 8 Rue la Boetie, Paris, France
Filed July 27, 1971, Ser. No. 166,475
Claims priority, application France, July 31, 1970, 7028323
Int. Cl. E02b *7/20, 7/46*
U.S. Cl. 61—22 **13 Claims**



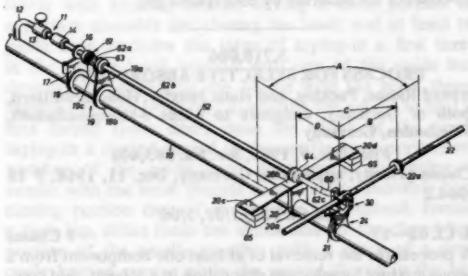
A movable dam for a navigable watercourse or lake in which a stationary portion of the dam is anchored in the bed of the water course and a movable gate system serves to regulate the cross-sectional area for flow of water through the dam.

3,718,003
PROCESS FOR PRODUCING LAND-FILLS
Charles Calvin Cook, Lakeland, and Erwin Mathew Haynsworth, Tampa, Fla., assignors to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of application Ser. No. 24,090, Mar. 31, 1970. This application Nov. 24, 1971, Ser. No. 201,860
Int. Cl. E02d *3/10*
U.S. Cl. 61—35 **5 Claims**



Waste slimes and tailings obtained from the beneficiation of various ores are utilized in the reclamation of otherwise useless land. Novel processes for formulating waste slimes and tailings into a reconstituted fertile soil having acceptable bearing strength are described. An object of this invention is to provide a convenient means for eliminating or minimizing the land and water pollution hazards normally associated with the disposal of the waste slimes produced in ore processing plants.

3,718,004
METHOD FOR MAKING AN UNDERWATER PIPELINE CONNECTION
John P. Oliver; Alfred W. Wedel, both of P.O. Box 1212, and Paul T. Priesmeyer, P.O. Box 1396, all of, Houston, Tex.
Filed April 21, 1970, Ser. No. 30,538
Int. Cl. F16l *1/00*
U.S. Cl. 61—72.3 **6 Claims**



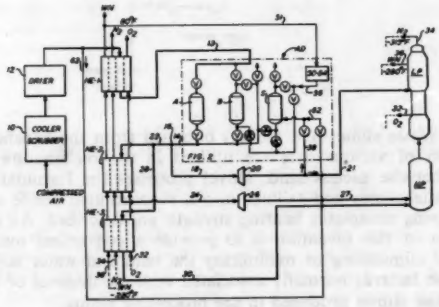
A lateral pipeline being laid is connected to a main pipeline lying on the bottom of the ocean by a tie-in assembly that is

connected to the lateral line above the surface of the water. The main line is equipped with a stub section of pipeline to which the lateral is to be connected. The angle between the lateral and the main line is measured and from this the tie-in assembly is designed. This assembly also includes two ball and socket type joints that permit limited misalignment between the sections of the tie-in assembly and the stub section of the pipeline connected to the main line and also allows relative rotation between at least two portions of the tie-in assembly. A connector assembly is used to connect the tie-in assembly to the stub pipeline section. An actuator is releasably connected to the tie-in assembly above the surface of the water and lowered with the tie-in assembly into the water to actuate the connector assembly to connect the tie-in assembly and the stub pipeline section. This actuator can then be recovered and used again.

3,718,005
REACTIVATED LOW TEMPERATURE ADSORBER SYSTEM WITH A NON-ADSORBING COLD ACCUMULATOR

Richard L. McDermott, Somerset, N.J., assignor to Airco, Inc., New York, N.Y.

Filed March 25, 1970, Ser. No. 22,483
Int. Cl. F25j *3/04, 5/00*
U.S. Cl. 62—13 **13 Claims**



A gas processing system having cyclicly reactivated adsorbers normally operable in a low temperature range, a cold accumulator for refrigeration storage, and valved conduits interconnecting the adsorbers, accumulator and a source of reactivation gas, providing for isolation of an adsorber for reactivation; transfer of the adsorber refrigeration to the accumulator by a reactivation gas stream; reactivation and purging of the adsorber by heated reactivation gas; cooling of the adsorber by reactivation gas at ambient temperature; retransfer of the refrigeration from the accumulator to the adsorber by a counterstream of reactivation gas; and supplemental final cool-down of the adsorber by cold system gas.

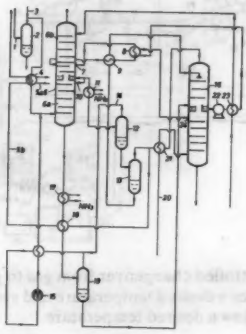
3,718,006
PROCESS FOR SELECTIVE ABSORPTION

Gerhard Ranke, Pocking, and Hans Jungfer, Hohenschaftlarn, both of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Dec. 9, 1969, Ser. No. 883,406
Claims priority, application Germany, Dec. 11, 1968, P 18 14 064.2
Int. Cl. F25j *3/03, 5/00*
U.S. Cl. 62—17 **9 Claims**

A process for the removal of at least one component from a gaseous mixture by selective absorption in a solvent, said component having an exothermic heat of solution in said solvent, said process comprising the steps of:

a. passing said gaseous mixture into the bottom zone of an absorption column having top, middle and bottom zones;
b. passing said solvent into the top zone of said absorption column;
c. withdrawing partially absorbed gaseous mixture from the middle zone of said column;

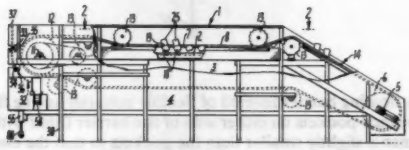


d. cooling said partially absorbed gaseous mixture;
e. recycling resultant cooled mixture to said absorption column; and
f. further contacting resultant recycled cooled gaseous mixture with said solvent to complete said absorption.

3,718,007
METHOD AND APPARATUS FOR HANDLING AND COOLING BOTTLES

Benjamin F. Randrup, 1488 High School Road, Sebastopol, Calif. 95472

Filed Nov. 28, 1969, Ser. No. 880,740
Int. Cl. F25d *13/06*
U.S. Cl. 62—63 **4 Claims**



Bottles or like articles are conveyed past a station at which an operation is performed with the article inverted. The articles are conveyed along a generally horizontal path of travel past the station and are thereafter rotated substantially 180° to an upright position. The articles are then lowered from the path of travel and conveyed away. The method and apparatus lends itself particularly to a cooling operation wherein the bottle is conveyed through a liquid to cause the contents at the neck of the bottle to be frozen.

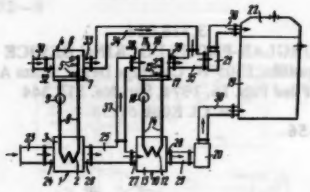
3,718,008
AIR CONDITIONING INSTALLATION

Lev Markovich Zusmanovich, Moscow, U.S.S.R., assignor to Tsentralny Nauchno-Issledovatelsky I Proektno Experimentalny Institut Inzhenernogo Oborudovania Gorodov, Moscow, U.S.S.R.

Filed April 7, 1971, Ser. No. 131,928
Int. Cl. F28d *17/04*
U.S. Cl. 62—309 **6 Claims**

An installation for conditioning air in an associated space, comprising at least two pairs of heat exchangers, each such pair including a surface heat exchangers and a mixing one, the

second (in the direction of the flow of the air being treated through the apparatus) pair of heat exchangers communicating through the surface heat exchanger of the first pair with the conduit through which ambient air to be treated by the apparatus is supplied, for this air, after its having been cooled in the last-mentioned heat exchanger, to be directed for still deeper cooling into the surface heat exchanger and the mixing heat exchanger of the second pair.

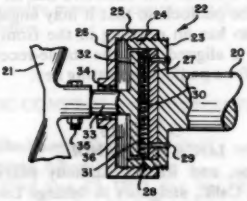


3,718,009

BREAKAWAY CLUTCH

Joseph Perina, Huntington, N.Y., assignor to American Velcro, Inc., Manchester, N.H.

Filed March 26, 1971, Ser. No. 128,239
Int. Cl. F16d *7/00, 43/20*
U.S. Cl. 64—28 R **2 Claims**



A power transmission clutch has driving and driven members which are interconnected by means of hooking elements and these members are so supported that they can move out of contact with each other if and when the torque transmitted exceeds the capacity of the hooking elements.

The clutch can be used to transmit power to the propeller of a small boat from the shaft of the boat engine. In this case the device is so constructed that the propeller cannot be lost should disengagement of the hooking elements on the driving and driven members occur.

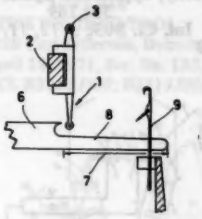
3,718,010

METHOD AND DEVICE FOR LAYING-IN YARN IN A WARP KNITTING MACHINE

Karl Kohl 10 Chlorodontstrasse, 6053 Obertshausen bei, Offenbach am Main, Germany

Filed Oct. 21, 1970, Ser. No. 82,780
Claims priority, application Germany, Oct. 21, 1969, P 19 52 810.0
Int. Cl. D04b *23/06*
U.S. Cl. 66—84 **2 Claims**

The operating speed of a Raschel knitting machine with a yarn laying-in arrangement is increased by spreading the lapping movements of the deflectors for the laid-in weft yarn over the knitting period of two or more courses in the ground fabric, the intervening courses being skipped by the laid-in yarn. The yarn deflectors are mounted on the sinker bar and moved into operating position only intermittently by a drive which operates the sinker bar with a different stroke in different courses.

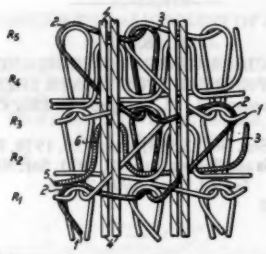


3,718,011

METHOD OF PRODUCING A WARP KNITTED OR SEWN FABRIC

Ervin Peschl, Ceska u Brna, and Jan Skrepek, Olsany, Czechoslovakia, assignors to W. Schlafhorst & Co., Monchengladbach, Germany, and Vyzkumny Ustav Pletarsky, Brno, Czechoslovakia, fractional part interest to each

Filed Apr. 17, 1970, Ser. No. 29,522
Claims priority, application Czechoslovakia, Apr. 17, 1969, 2,747
Int. Cl. D04b *23/08*
U.S. Cl. 66—192 **11 Claims**

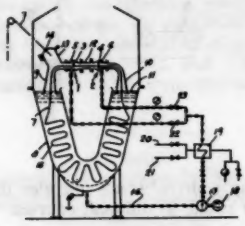


Method of producing a warp knitted or stitch-bonded fabric with knitting needles having a hook portion and a portion movable for closing the hook and at least two guide bars, includes the steps of laying-in a first thread in the needle hook portion with one of the guide bars, downwardly displacing the needle with the hook thereof remaining open, upwardly displacing the needle so that the first thread slides down onto the shank of the needle, laying-in a second thread in the needle hook portion with another of the guide bars, downwardly displacing the needle with the hook thereof closed by the movable hook-closing portion thereof so that the first thread, forming a tuck lap, slides from the shank and off the closed hook portion of the needle together with a stitch of a previously knitted course while the second thread in the next-succeeding course forms a stitch of a ground web structure, and during the foregoing steps, inserting unstitched standing threads in longitudinal direction in the ground web structure by means of an additional guide bar.

3,718,012
DEVICE FOR THE WET TREATMENT OF TEXTILE MATERIALS

Maria Teresa Clermont Vinas, Paseo Can Feu 68/80, Sabadell, Spain

Filed Sept. 14, 1971, Ser. No. 180,261
Claims priority, application Spain, Sept. 21, 1971, 384,169
Int. Cl. B05c *3/12, 11/124*
U.S. Cl. 68—9 8 Claims

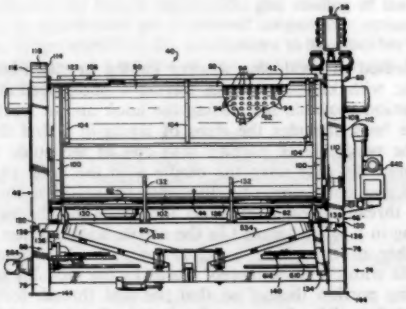


Device for the wet treatment of textile materials, such as fabrics in rope form, comprising two Venturi injectors of the central suction type, their relative position being so that their outlets are positioned opposed to each other. The textile material travels in a continuous form through the central suction conduits of the two injectors into the outer conduits of the same where the treatment fluid is injected through regulating devices which permit variation of the fluid flow quantity supplied to each injector between 0% and 100% of the total fluid flow, and, in that way, the suctional power of each injector. This determines the forward feeding of the fabric in the direction which corresponds to the injector with the greater suctional power, and the opposite injector with the smaller drawing power produces a slowing down and compactation effect on the fabric.

3,718,013
COMMERCIAL LAUNDRY MACHINE AND BASE ASSEMBLY AND CART POSITIONER THEREFOR

Alex Toth, Lincolnwood, Ill., assignor to Ellis Corporation, Chicago, Ill.

Division of Ser. No. 22,508, March 25, 1970, Pat. No. 3,613,406. This application July 28, 1971, Ser. No. 166,719
Int. Cl. D06f *39/08, 39/12*
U.S. Cl. 68—208 8 Claims

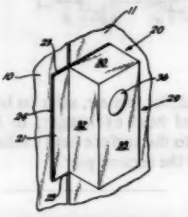


A commercial laundry machine includes an inner perforated cylinder and an outer casing both mounted on a pair of end frames for rotation about their common central axis, and includes a base assembly upon which the washer is supported. Movably mounted drain chutes on the base assembly serve to transfer discharged washing fluids from the casing, and are moved out of the way to clear the region beneath the machine for laundry carts. A cart positioning system moves carts from a convenient location at the front of the machine and an unloading position directly beneath the casing, and returns the full carts to the front of the machine.

3,718,014
BURGLAR-PROOF LOCKING DEVICE

Fred M. Delgadillo, 1505 W. Carriage Drive, Santa Ana, Calif.

Filed Feb. 16, 1971, Ser. No. 115,344
Int. Cl. E05b *67/38*
U.S. Cl. 70—56 7 Claims

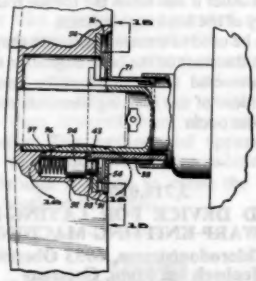


A burglar-proof locking device for securing, with a conventional padlock, first and second members wherein a padlock-receiving staple is secured to the first member. The device comprises a unitary, hollow, box-like structure having top, front, back and first and second side walls of dimensions suitable for containing the padlock therein. The back wall is adapted to be connected to the second member and has a staple-receiving slot therein. The structure has an open bottom for insertion of the padlock so that it may engage the staple. The structure also has an opening in the front wall thereof which faces and is aligned with the staple-receiving slot for providing access for a padlock-actuating key.

3,718,015
LOCK SET HANDLE

John Axel Tornoe, and Robert Anthony Marotto, both of Redwood City, Calif., assignors to Schlage Lock Company, San Francisco, Calif.

Filed March 17, 1971, Ser. No. 126,037
Int. Cl. E05b *3/04*
U.S. Cl. 70—224 5 Claims

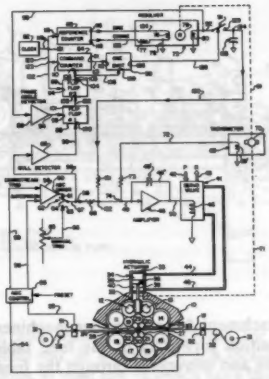


A lock set handle for use with a lock set spindle rotatable about an axis has a handle body with a cavity adapted to receive the spindle and has driving means engageable with the spindle. Disposed eccentrically of the axis are means interengaging the driving means and the handle body for preventing relative rotation of the driving means and the handle body with respect to the axis. For a reversible handle, the interengaging means interlocks in either of two diametrically opposite positions.

3,718,016
SCREWDOWN CONTROL SYSTEM FOR ROLLING MILLS

Patrick M. Dark, East Aurora, N.Y., assignor to Moog Inc., East Aurora, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,486
Int. Cl. B21b *37/00*
U.S. Cl. 72—8 14 Claims

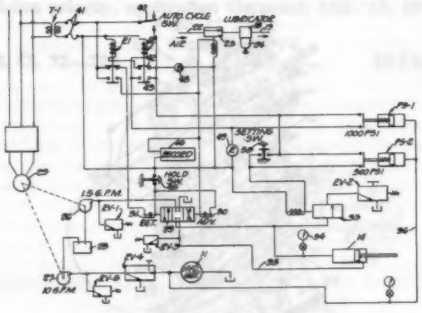


The velocity of a load is controlled by an electrohydraulic servoactuator including hydraulic actuator means for positioning said load, and electrical input servovalve means for controlling the flow of fluid with respect to said actuator means. When zero velocity is desired a position holding means of an electrical nature is activated to produce an input signal for said servovalve means to counteract the tendency for load position variation.

3,718,017
AUTOMATIC CONTROL SYSTEM FOR TUBE EXPANDER TOOL

Marvin J. Blackburn, Pasadena, Calif., assignor to Vernon Tool Company, Alhambra, Calif.

Filed Aug. 23, 1971, Ser. No. 173,864
Int. Cl. B21d *9/00*
U.S. Cl. 72—20 21 Claims

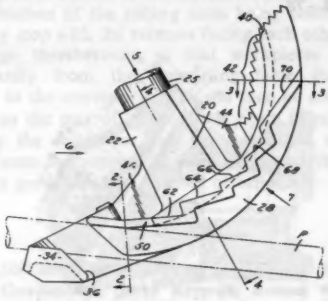


An automatic control system for a tube expander tool of the type having a hydraulically powered rotary tool which is advanced and retracted by a reversible linear motor. Operation of automatic cycling is initiated by a manual control whereas axial movement of the tool can be interrupted at any time by operating a hold control while rotation of the tool continues as long as necessary to iron out excess metal or to reposition the tube in the bore should this be desirable. The tool is maintained under constant load at all times by load sensor means in the tool advancing circuit and operable to vary the rate of tool advance to maintain a desired constant load and to prevent overloading. Accordingly, the rate of tool advance varies inversely as the load on the tool.

3,718,018
PIPE BENDING TOOL

John D. Benfield, 2920 East Jefferson, Detroit, Mich.

Filed April 14, 1971, Ser. No. 133,942
Int. Cl. B21e *51/00*; B21j *13/08*
U.S. Cl. 72—31 5 Claims

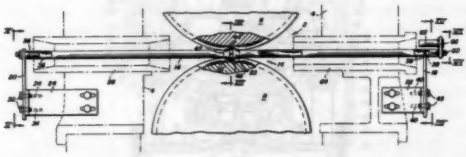


A pipe bending tool intended for foot pressure or arm leverage for actuation which incorporates visual planes in the body of the device together with indicia on both faces thereof to indicate to an operator when a certain angle of bend has been reached. The multiple planes, each for a particular angle, form a stepped zigzag side flange along one or both sides of the bending tool which not only reinforces but also protects the bend groove.

3,718,019
GAUGE DEVICE FOR ALIGNMENT OF ROLLS OF A ROLLING MILL

William A. Box, Bethel Park, and Joseph A. Wojnar, Pittsburgh, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 16, 1971, Ser. No. 208,775
Int. Cl. B21b *31/00*
U.S. Cl. 72—35 6 Claims



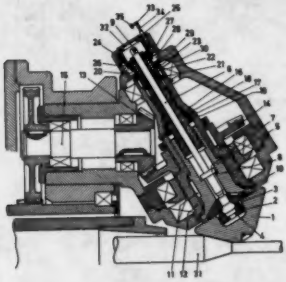
Device includes a gauge head mounted on a tube positionable in a horizontal plane along the centerline of a rolling pass of a rolling mill including two pairs of opposed rolls disposed around a common point in the center of the roll pass. Gauge head is disposed in the mill pass and is made up of four electrical probes each having a spring-loaded contact tip projecting a uniform distance from the centerline of the tube. The contact tips are spaced 90° apart around the periphery of the tube and each is engageable by the rolling surface of one of the four rolls forming the roll pass when the roll is moved toward the centerline of the roll pass to a predetermined distance away from the centerline of the roll pass for rolling a particular size workpiece. Each of the contact tips is connected through its respective probe to an indicator light in an electrical circuit

which causes the respective indicator light to light up when the contact tip is touched by the rolling surface of the roll during alignment of the mill.

3,718,020
ROLLING MILL

Hermann Leitner, Langenfeld, Germany, assignor to Siemag Siegener Maschinenbau GmbH, Dahlbruch, Germany

Filed March 1, 1971, Ser. No. 119,617
Claims priority, application Germany, March 3, 1970, P 20 09 867.3
Int. Cl. B21b *31/18*
U.S. Cl. 72—78 15 Claims

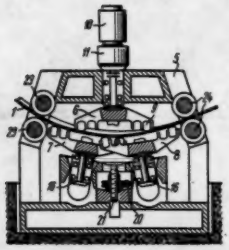


A rolling mill having cantilevered rolls of generally conical shape whose axes lie at an acute angle to the direction of stock movement.

3,718,021
METHOD OF SHAPING SHEET BLANKS TO SPHERICAL FORM AND A DEVICE TO REALIZE SAME

Jury Ivanovich Shein, Volgograd, U.S.S.R., assignor to Vsesojuzny nauchnoissledovatelsky i proektny institur, Lenina, U.S.S.R.

Filed Sept. 22, 1971, Ser. No. 182,659
Claims priority, application U.S.S.R., Sept. 22, 1970, 1,478,325; Oct. 20, 1970, 1,484,912
Int. Cl. B21d *5/14*
U.S. Cl. 72—126 5 Claims

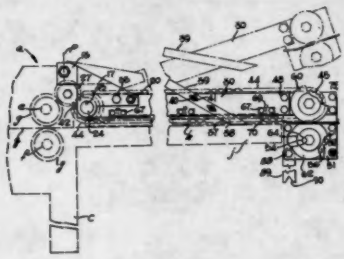


A blank is continuously passed through groups of freely rotating rollers located circumferentially in each group and rotating along these circumferences. The axes of the groups lie on one plane and intersect in a point which is the center of the sphere, with the rollers bending the blank circumferentially and shaping it to a spherical form. The device comprises a forming unit composed of three rotary heads with bending rollers. Two heads whose rollers are directed to one side are adjustable for the radius of the sphere to be produced, and the rollers of the third head are directed towards the rollers of the two heads, thus forming a bending and a bearing group of deforming elements directed opposite each other.

3,718,022
COMBINED SLITTING AND OVERLAYING FEED APPARATUS FOR ROLL FORMER MACHINES AND THE LIKE

Lamont R. McClain, Mehlville, and Emil L. Slavik, Lemay, both of Mo., assignors to Engel Industries, Inc., Ballwin, Mo.

Filed July 8, 1971, Ser. No. 160,760
Int. Cl. B26d *7/06*
U.S. Cl. 72—132 5 Claims

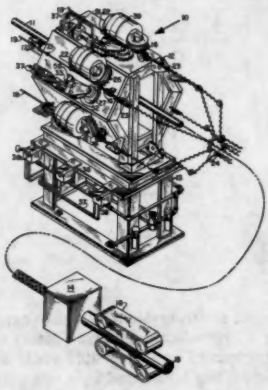


A slitter attachment for roll former machines, which slits metal in a position forwardly of the feed table of the roll former machine and conveys it through the feed channels of the table to different laterally spaced portions of the rolls. Hinged by a lateral hinge pin to be raised out of position and lowered into engagement with the gear train of the roll former machine, the powered conveyor of the slitter has a laterally slidable support arm surrounded above and below by a cog belt. At the remote end of the arm are slitter rolls driven by the cog belt, whose lower run moves over one of the feed channels toward the rolls of the machine. A magnet, positioned just above this part of the cog belt, lifts the slit workpiece against its under surface and conveys it into the rolls of the machine.

3,718,023
WIRE CORRUGATOR

Willis L. Chrisman, Fairmont, and Walter R. Ring, Sr., Elm Montpeliter, both of Ind., assignors to Anaconda Wire and Cable Company, New York, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,416
Int. Cl. B21c *23/24*
U.S. Cl. 72—196 11 Claims

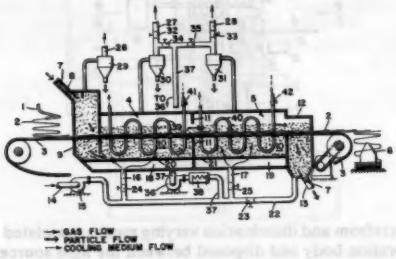


An apparatus for corrugating cable drain wires has an individual motor for each of a plurality of pairs of corrugating rolls mounted around a polygonal frame and having a common speed control.

3,718,024
APPARATUS INCLUDING A FLUIDIZED BED FOR COOLING STEEL ROD THROUGH TRANSFORMATION

Vito J. Vitelli, Shrewsbury, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Feb. 12, 1971, Ser. No. 114,999
Int. Cl. C21d 9/56; B21c 1/00
U.S. Cl. 72—201 17 Claims

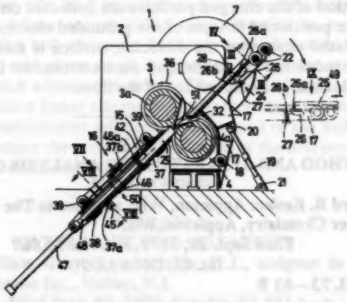


Apparatus and method are disclosed for the controlled cooling of steel rod, in a system which includes at least two cooling sections, at least one of which has a fluidized bed cooling means, each having means to control the rate of cooling therein. Several such control means are disclosed; among them are means to vary the fluidizing gas flow rate, means to recycle the fluidizing gas, means to preheat the fluidizing gas, means for converting a section from fluidized bed cooling to forced- or still-air cooling, and heat exchange means in contact with the cooling medium. The employment in such a system of plural cooling sections and such control means obtains a controlled-cooling method having a great latitude of cooling rates and of combinations thereof, and provides a system capable of handling a wide range of rod types, both plain carbon and alloy steels, and of producing a wide variety of end products.

3,718,025
MACHINE FOR STRETCHING MATERIAL PRIOR TO ROLLING OR FORGING

Eberhard Werner, Leverkusen, Germany, assignor to Eumuco Aktiengesellschaft fur Maschinenbau, Leverkusen, Germany

Filed Mar. 12, 1971, Ser. No. 123,751
Claims priority, application Germany, Mar. 14, 1970, P 20 12 249.0
Int. Cl. B21b 39/14
U.S. Cl. 72—222 19 Claims

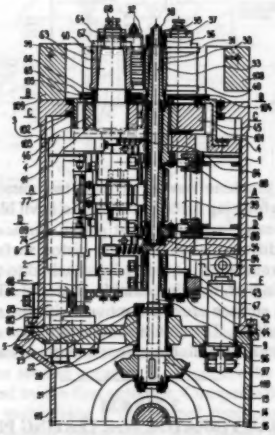


A machine for stretching workpieces comprises a pair of rolling tools, each rolling tool having a plurality of parallel annular segments on the cylindrical surface thereof such that workpieces are rolled between successive pairs of segments as they pass between the rolling tools. The rolling tools are positioned such that the rolling plane therebetween is located in a path inclined at an acute angle relative to the horizontal. Conveyor means is provided for successively feeding workpieces upwardly along the inclined path to successive segments of the pair of rolling tools and a pivotally mounted supporting table is provided at the opposite side of the pair of rolling tools, the surface of the table being along the inclined path for receiving workpieces from the rolling tools. Recesses are provided at one point in the surface of each of the rolling tools, rotation of the rolling tools being controlled such that they stop with the recesses facing each other forming a passage therebetween so that workpieces may slide downwardly from the supporting table through the passage to the conveyor means and then be conveyed upwardly as the pair of rolling tools begin to rotate again, whereby the workpiece may be rolled and carried upwardly onto the supporting table again and the cycle repeated a predetermined number of times.

3,718,026
CLUSTER MILL WITH CANTILEVERED ROLLS

Jan J. Gawlikowicz; Jerzy Krywult; Roman Wusatowski; Jozef Garczynski, all of Gliwice; Aleksander Makomaski, Katowice, and Leopold Sikora, Swietochlowice, all of Poland, assignors to Instytut Melaturgii Zelaza, Gliwice, Poland

Filed June 3, 1970, Ser. No. 42,910
Claims priority, application Poland, June 7, 1969, T-134056; April 14, 1970, P-140003
Int. Cl. B21b 29/00, 31/16
U.S. Cl. 72—242 14 Claims



Cluster mill with cantilevered rolls designed mainly for rolling of workpieces comprises two cantilevered working rolls of small diameter and long body, and four cantilevered back-up rolls of relatively great diameter. Thanks to the small diameter of the working rolls a better elongation of the rolled metal is obtained, the whole rolling process being more economical.

A few passes, up to several dozens of passes may be cut on working surfaces of the working rolls, a great rigidity of said rolls being maintained, and thus metal workpieces may be precisely rolled.

The working rolls and back-up rolls are carried in a frame composed of plates and which are shiftable perpendicularly to the rolling line on columns. The working rolls are adjusted symetrically to the rolling line. A driving shaft sliding in a

second driving shaft drives the working rolls through an assembly of gears, couplings being thereby eliminated. The drive from a common driving shaft may be transferred to the second driving shaft through bevel gears or through a frontal gear coupling or from an individual driving motor.

It is possible to combine a cluster mill with cantilevered rolls with every method of cluster mill setting, as hitherto known.

3,718,027

FORMING MACHINE FOR HEATED MATERIALS, PARTICULARLY METALS

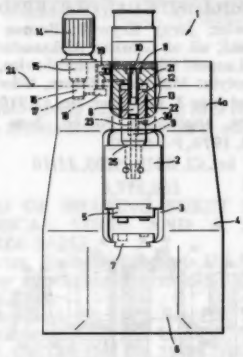
Gottfried Rau, Leverkusen, and Albert Eck, Wipperfurth, both of Germany, assignors to Eumuco Aktiengesellschaft fur Maschinenbau, Leverkusen, Germany

Filed Aug. 17, 1970, Ser. No. 64,177

Claims priority, application Germany, Aug. 16, 1969, P 19 41 806.5

Int. Cl. B21j *11/00*

U.S. Cl. 72—407 **18 Claims**



A forming machine having at least two piston means for providing a deforming force between the anvil block and ram. The piston means includes a first piston surface area that is substantially different than a second piston surface area. The smaller piston surface area is fixedly attached to the ram to effect hammering of the deformable material. The first and second piston surface areas are moved with the same hydraulic driving medium. The first and second piston surface areas are movable and controllable independently of each other.

3,718,028

TORSIONAL VIBRATOR FOR TESTING PLASTICS MATERIALS

Kurt Moser, Fribourg, and Beat Hochli, Bern, both of Switzerland, assignors to Lonza Ltd., Gampel/Valais (Direction: Basel), Switzerland

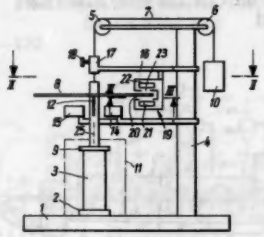
Filed March 12, 1971, Ser. No. 123,763

Claims priority, application Switzerland, Oct. 13, 1970, 1058/70

Int. Cl. G01n *3/32*

U.S. Cl. 73—15.4 **2 Claims**

A torsional vibrator for testing plastics materials having a first loading clamp for retention of one end of a plastics test piece, a vibration body, a second loading clamp rigidly joined to the vibration body for gripping the opposite end of the plastics test piece, a temperature chamber enclosing the plastics test piece, a device for exciting torsional vibrations of a torsion pendulum comprising the plastics test piece, the vibration body and the second loading clamp, and means for measuring the frequency of the pendulum vibrations including a light source and a photoelectric element receiving illumination therefrom and illumination varying means associated with the vibration body and disposed between the light source and photoelectric element.



3,718,029

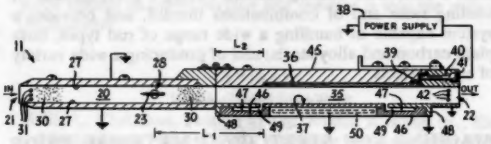
ELECTROSTATIC MASS PER UNIT VOLUME DUST MONITOR

Meredith C. Gourdine, Fort Lee, N.J., and S. Edward Law, Athens, Ga., assignors to Gourdine Systems Incorporated, Livingston, N.J.

Filed Jan. 25, 1971, Ser. No. 109,145

Int. Cl. G01n *15/00*; B01d *53/30*; B03c *3/00*

U.S. Cl. 73—28 **33 Claims**



Electrogasdynamic methods and apparatus for measuring the mass of particulate matter entrained in a gaseous flow per unit volume of such flow are disclosed. The gaseous flow is passed down a bounded flow path and the entrained particles are exposed to and charged by a corona discharge. The charged entrained particles are carried downstream to a collection section where the particles are repelled by a charged deposition electrode and driven toward a grounded electrode. A portion of the charged particles are collected on a dielectric surface positioned in front of the grounded electrode. The accumulated charge on the dielectric surface is then measured by an induction electrode and an electrometer to show the particle mass per unit volume of the flow.

3,718,030

METHOD AND APPARATUS FOR ANALYSIS OF FLUID SUSPENSIONS

Richard B. Kesler, Appleton, Wis., assignor to The Institute Of Paper Chemistry, Appleton, Wis.

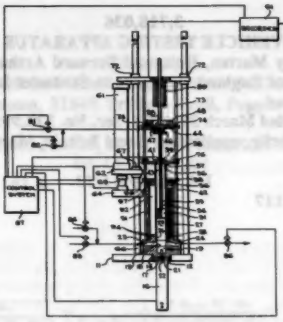
Filed Sept. 28, 1970, Ser. No. 75,967

Int. Cl. G01n *5/00*

U.S. Cl. 73—61 R **1 Claim**

A method and apparatus are described for determining the weight of a moisture-free, compressible material in a given volume of fluid suspension. The given volume of the suspension is confined and the material in the confined suspension is compressed with a movable porous surface at a predetermined

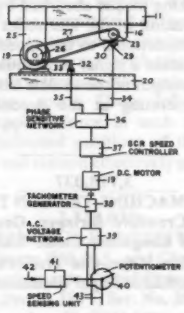
pressure to form a mat of the material. The thickness of the mat thus formed is measured and the weight of the material is determined therefrom from a known relationship. The apparatus may be flushed out by movement of a lower nonporous piston which retracts to open an outlet from the chamber.



3,718,031
MASS MEASURING SYSTEM APPLIED TO BELT CONVEYORS

John L. Christmann, Passaic, N.J., assignor to Merrick Scale Mfg. Company, Passaic, N.J.

Filed Dec. 3, 1970, Ser. No. 94,778
Int. Cl. G01g *11/00*
U.S. Cl. 73—67.2 **10 Claims**



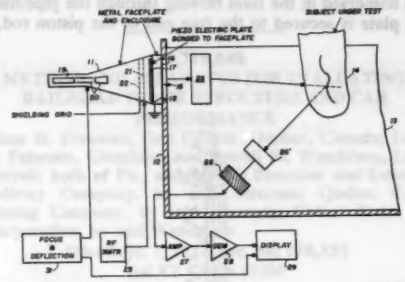
A 90° phase angle lag is created between the resonant vibration frequency of a load on a belt conveyor and the frequency of a motor driven eccentric inducing vibration to stringers supporting the belt conveyor between vertical members and deviation of said phase angle is detected by a phase sensitive network which adjusts the motor. The speed of the motor is converted into a linear alternating current voltage transmitted across a potentiometer adjusted by the speed of the belt conveyor to produce the product of the speed of the belt conveyor and the load on said conveyor.

3,718,032
ULTRASONIC VISUALIZATION

George William Gray, Lambertville, N.J., assignor to Hoffman-La Roche Inc., Nutley, N.J.

Filed Sept. 18, 1970, Ser. No. 73,521
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.7 **7 Claims**

An ultrasonic transmitting apparatus for examination of a subject in a field comprising, a CRT transmitter having a transducer which is excited in a pattern to generate corresponding successive acoustic waves to scan the subject in "-

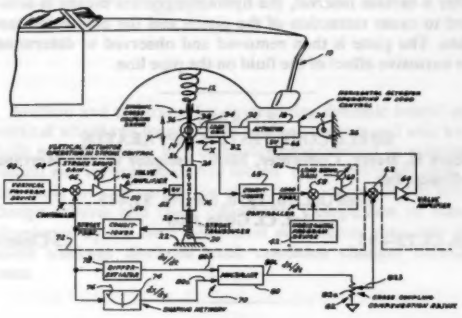


flying spot" type fashion, and a receiver for converting the subject reflected signals and providing a visual display.

3,718,033
TESTING APPARATUS UTILIZING POSITION-FORCE CROSS COUPLING CONTROL

Niel R. Petersen, Hopkins, Minn., assignor to MTS Systems Corporation, Minneapolis, Minn.

Filed April 20, 1971, Ser. No. 135,560
Int. Cl. G01n *3/32*
U.S. Cl. 73—71.7 **7 Claims**



Where a specimen, such as a wheel spindle of an automobile, is acted on by a first actuator to position the spindle along a vertical axis and a second actuator to apply a force or load along a horizontal axis, both of which actuators are pivotally mounted, cross coupling errors arise because the load being applied by the second actuator is influenced by the displacement produced by the first actuator. Compensation therefor is provided by multiplying a first signal representative of the change in horizontal displacement with respect to vertical displacement by a second signal representative of the vertical velocity of the specimen or the time rate of change of the vertical displacement thereof, the resulting product signal being employed in modifying the control of the horizontal actuator to provide the proper compensation.

3,718,034
HYDRAULIC CORROSION MONITORING COUPON INJECTOR

Dean E. Swearingen, 114 North Crownpoint, Ada, Okla.

Filed Sept. 17, 1970, Ser. No. 72,972
Int. Cl. G01n *17/00*
U.S. Cl. 73—86 **3 Claims**

A piston and cylinder assembly is mounted in valved communicating relation to the interior of a pipe line. The assembly

includes a piston having a rod extending downwards toward a port in the pipe line. Upon proper actuation of hydraulic control means, the piston is forced downwardly until the piston rod is immersed in the fluid flowing through the pipe line. A metal plate is secured to the free end of the piston rod, the

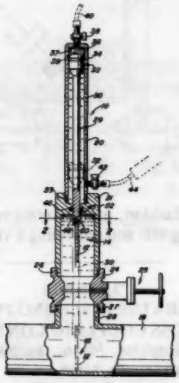


plate being subjected to the material flowing in the pipe line. After a certain interval, the hydraulic control means is actuated to cause retraction of the piston and the connected test plate. The plate is then removed and observed to determine the corrosive effect of the fluid on the pipe line.

3,718,035

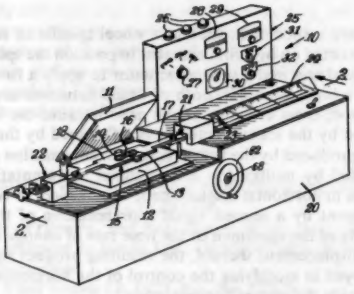
SHELL CORE TESTING APPARATUS

Albert H. Doerr, Coldwater, Mich., assignor to The Marmon Group, Inc.

Filed Oct. 16, 1970, Ser. No. 81,443

Int. Cl. G01n *3/08*

U.S. Cl. 73—95 **13 Claims**



A testing apparatus for testing the tensile strength of a core formed of resin impregnated sand such as for use in a shell molding operation. The testing apparatus includes means for setting the resin impregnated sand to form a sample shell core and means for indicating the tensile strength of the set core. The indicating means includes a swingable element and means for progressively increasing torque to the swingable element to apply a progressively increasing tensile stress to the set core sample suitable to ultimately break the core sample. Scale means are associated with the indicating means for indicating the specific torque applied at the time of breakage of the sample.

3,718,036

VEHICLE TESTING APPARATUS

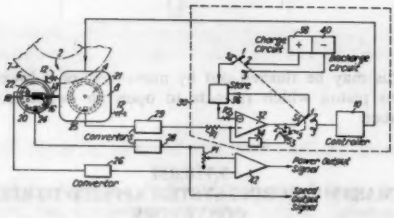
John Anthony Marten, Holt, and Bernard Arthur Gee, Marham, both of England, assignors to Suntester Limited, Norfolk, England

Filed March 29, 1971, Ser. No. 128,995

Claims priority, application Great Britain, March 31, 1970, 15,225/70

Int. Cl. G01l *5/13*

U.S. Cl. 73—117 **7 Claims**



The disclosure describes a chassis dynamometer provided with control means which may be activated so as to maintain the acceleration of the dynamometer rollers at a predetermined constant positive or negative value. Means are provided to multiply the braking torque absorbed by the dynamometer by the speed of rotation of the idle roller and to add to the product a signal proportional to the speed of rotation of the rollers so as to maintain a signal substantially proportional to the traction power output of the vehicle being tested while accelerating or decelerating at the predetermined constant value.

3,718,037

PAPER MACHINE TENSION TESTER

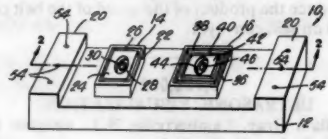
Peter Jack Eldon Crawford Stringer, Grand'Mere, Quebec, Canada; Richard Langham Castle Knight, Hazle Grove, and Donald Gordon Waye, Old Trafford, both of England, assignors to Consolidated Paper (Bahamas) Limited, Nassau, Bahamas

Filed Nov. 23, 1970, Ser. No. 91,745

Claims priority, application Canada, Nov. 24, 1969, 068,261

Int. Cl. G01l *5/08*

U.S. Cl. 73—144 **16 Claims**



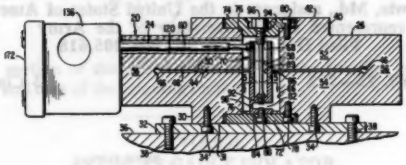
A device for measuring local tension or modulus of elasticity of web comprising a vacuum chamber into which a portion of the width of the web is drawn and the deflection of the web

into the chamber measured to provide a measurement of the tension and to a pair of such devices having cavities of different widths operating together and the outputs compared to obtain a reading of the local modulus of elasticity of the web being tested.

3,718,038
FORCE MEASURING INSTRUMENT

Clarence Johnson, 31649 Trillium Trail, Pepper Pike, Cleveland, Ohio

Filed Jan. 26, 1971, Ser. No. 109,851
Int. Cl. G01l *1/04*
U.S. Cl. 73—141 A **1 Claim**

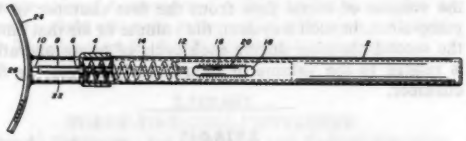


A force transducer having a force sensing deflection structure adapted to receive and be deflected by a force to be measured, a device providing a measurement of deflection, and deflection transmission linkage interconnecting the force sensing structure and the above-mentioned device. The transmission linkage comprises a number of serially connected parts which amplify the transmitted deflection and which are rigidly connected one to another to eliminate lost motion. The force sensing structure is formed with two deflection portions which are rigidly joined to each other only outwardly of an intermediate deflection space. These deflection portions are deflected by an applied force in such a manner that the deflected and undeflected positions of the region at which deflection is measured remain effectively parallel.

3,718,039
PAIL BAIL EAR TESTER

James A. Bacon, Cherry Hill, N.J., and Charles J. Lindenmuth, Levittown, Pa., assignors to United States Steel Corporation

Filed Dec. 2, 1971, Ser. No. 203,992
Int. Cl. G01l *5/00*
U.S. Cl. 73—141 AB **3 Claims**

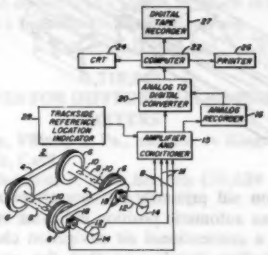


Device of the invention functions to apply pulling pressure on the bail ear of a pail to determine if the ear is securely affixed to the pail. The device includes a pressure plat attached to a leg extending at an angle from a lever having a spring-loaded bar with an ear-engaging end projecting therefrom, and indicating means connected with the bar to indicate the amount of pressure exerted on the ear when the end of the bar is engaged with the ear as the pressure plate is pressed against the body of the pail by exerting downward pressure on the end of the lever.

3,718,040
METHOD AND APPARATUS FOR EVALUATING RAILROAD TRACK STRUCTURE AND CAR PERFORMANCE

William H. Freeman, Port Cartier, Quebec, Canada; Leavitt A. Peterson, Glenshaw, and Joseph M. Wandrisco, Lower Burrell, both of Pa., assignors to Bessemer and Lake Erie Railway Company, by said Peterson; Quebec Cartier Mining Company, by said Freeman; United States Steel Corporation, by said Wandrisco

Filed Sept. 7, 1971, Ser. No. 178,131
Int. Cl. G01m *19/00*
U.S. Cl. 73—146 **43 Claims**

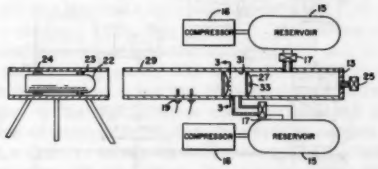


Method and apparatus for determining dynamic lateral and vertical wheel-rail forces. Axle bending sensors and axle load cells provide signals to a computer programmed to calculate lateral and vertical wheel-rail forces. These forces are used as the basis for comparing the effects of a variety of car truck design criteria and track conditions. Comparison of forces developed by the same equipment on different runs over the same trackage discloses track condition changes between runs.

3,718,041
PROJECTILE DECELERATION DEVICE

Kenneth P. Jones, 9106 Camille Drive SE., Huntsville, Ala. 35802, and Cleves H. Howell, Jr., deceased, by Edith S. Howell, executrix, Huntsville, Ala.

Filed Oct. 1, 1971, Ser. No. 185,646
Int. Cl. G01m *19/00*
U.S. Cl. 73—167 **6 Claims**



A tubular member disposed to receive a projectile in flight is provided with a closed end and supplied with compressed air to oppose progress of the projectile in the

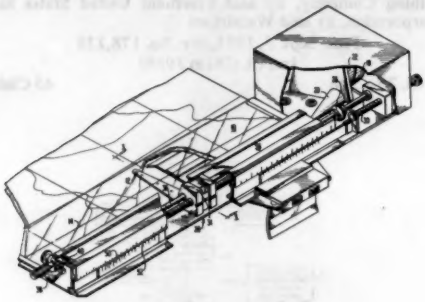
member and bring the projectile to a stop. A relief valve is provided to relieve the air pressure as the projectile comes to the stop to prevent reverse progress thereof.

3,718,042

AUTOMATIC GEOGRAPHICAL POSITION INDICATOR

Crisogono Herrera, Apdo Postal No. 1254, Monterrey, N. L., Mexico

Filed Dec. 2, 1970, Ser. No. 94,423
Int. Cl. G01c *21/00*
U.S. Cl. 73—178 R **4 Claims**



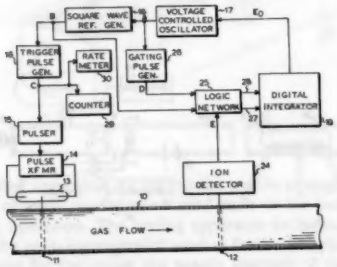
A navigation aid primarily for aircraft pilots and which functions as an automatic position indicator includes means for clamping a conventional air navigation chart beneath a transparent hollow housing so that the projected route between fixed points on the chart is visible through the housing. Mounted within the housing and movable longitudinally therealong is a cursor member. The means for moving the cursor member along the housing and over the projected flight path is a constant speed device adjustably geared to the cursor drive so that the speed of the cursor may be adjusted to that of the aircraft whereupon the position of the cursor over the navigational chart continuously corresponds to the position of the aircraft along the predetermined flight path.

3,718,043

IONIZATION GAS FLOW METER WITH PULSE RATE SERVO

Jack B. Fishman, Pasadena, and William E. Mutschler, La Verne, both of Calif., assignors to Nucleonics Development Company, Monrovia, Calif.

Filed Dec. 15, 1970, Ser. No. 98,280
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 F **10 Claims**



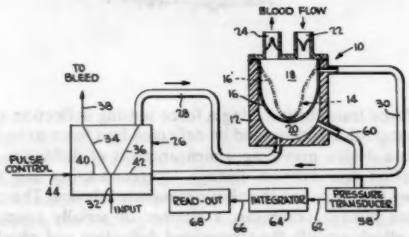
An injection flow meter is provided with means for triggering an X-ray beam generator to produce a sheet of ions in gas flowing in a pipeline at a rate determined by a voltage controlled oscillator having a period approximately equal to the transit time of a sheet of ions to a detector downstream. A logic network, activated at approximately the time an ion sheet is to be detected in order to lock out spurious detector pulses, continually determines whether the ion sheet arrives before or after the X-ray beam generator is retriggered to so adjust the control voltage that the X-ray beam generator is continually retriggered at substantially the same time ion sheets are being detected. A failure to detect ion sheets will not affect the last established control voltage thereby dividing the flow into a number of precise units of volume even in the absence of detector pulses.

3,718,044

FLOW METER FOR INDIRECTLY MEASURING THE FLOW OF BLOOD FROM A BLOOD PUMP

James W. Joyce, Jr., Rockville, and Fernando Villarroel, Bowie, Md., assignors to the United States of America as represented by the Secretary of the Army

Filed Dec. 7, 1971, Ser. No. 205,618
Int. Cl. G01f *1/00*
U.S. Cl. 73—223 **3 Claims**



A flow meter is disclosed which indirectly measures the flow of blood from a blood pump without the necessity of entering the blood stream itself to secure a measurement. The flow meter is contemplated to be utilized in conjunction with a pulsatile blood pump of the type comprising a fixed volume cavity divided by a flexible member into a first chamber filled with blood and a second chamber, and wherein the blood in the first chamber is expelled by the pump upon compression of the flexible member by means of fluid pulses delivered by a fluid amplifier and applied to the second chamber. The instantaneous pressure of fluid in the second chamber is sensed and a signal is produced representative of the time varying value thereof. This signal is subsequently integrated to produce an output signal representative of the volume of fluid flow into the second chamber of the pump and thus the volume of blood flow from the first chamber of the pump since, in such a system, the volume of air that enters the second chamber during each cycle of pump operation is related to the volume of blood expelled from the first chamber.

3,718,045

THERMOMETER SPINNER

Emery Dutch, 320 West 77th Street, New York, N.Y.

Filed July 19, 1971, Ser. No. 163,787
Int. Cl. G01k *5/06*
U.S. Cl. 73—373 **3 Claims**

An improved, hand-operated, thermometer spinner including a thermometer gripping and spinning section comprising a pair of telescoping members axially movable with respect to one another to expose an opening for receiving and gripping the thermometer. The gripping section is linked to a shaft

which is rotatable upon the application by hand of an axial force to a gripping member coupled to the shaft to convert the

axial motion of the gripping member to the rotation of the shaft and thus of the gripping section.

3,718,046

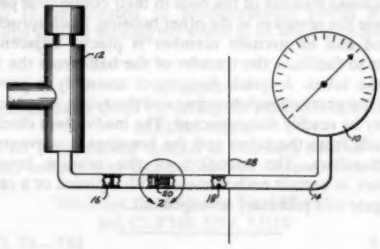
PRESSURE GAUGE ISOLATOR

Robert W. McJones, 529 Via Del Monte, Palos Verdes Estates, Calif.

Filed Oct. 8, 1970, Ser. No. 79,063

Int. Cl. G01l *19/06*

U.S. Cl. 73—395 **6 Claims**



A pressure gauge isolator employs a tube or line between the pressure gauge and a source of pressure. A translatable piston or plug is disposed within the line between two constrictions. The first constriction prevents the plug from entering the system which comprises the source of pressure. The second constriction prevents the plug from passing beyond the constriction to prevent excessive pressurization of the gauge and to positively prevent the fluid of the pressure source from reaching the gauge. The plug or piston has a first end in sealing engagement with the inner wall of the tube and facing the pressure source. A second end of the plug has a diameter to provide a slight clearance between it and the inner wall of the tube. The plug is made of resilient material such as rubber.

3,718,047

FORCE-TO-SIGNAL CONVERTER

Mutsuaki Nakagawa; Takao Tauchi, and Tadashi Nishihara, all of Musashino-shi, Tokyo, Japan, assignors to Kabushiki Kaisha Yokogawa Denki Seisakusho, Tokyo, Japan

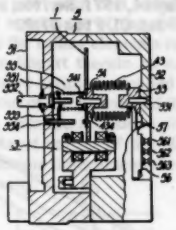
Filed Dec. 15, 1970, Ser. No. 98,268

Claims priority, application Japan, Dec. 26, 1969, 44/907; Jan. 12, 1970, 45/3406; Jan. 12, 1970, 45/3405; Jan. 27, 1970, 45/7533

Int. Cl. G01l *7/08, 9/10*

U.S. Cl. 73—398 R **7 Claims**

A force-to-signal converter having a device for receiving an external force, a device for transmitting the external force, a third device for converting the external force delivered from the second-mentioned device into a corresponding deflection,



and a device for converting the deflection obtained from the third-mentioned device into a signal, in which the third-mentioned device is a substantially E-shaped spring.

3,718,048

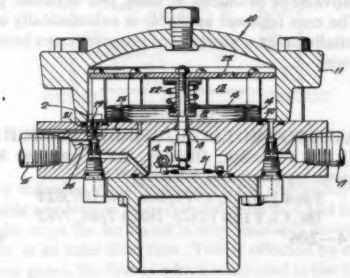
RELIEF VALVES FOR DIFFERENTIAL PRESSURE FLOW METERS

Claude B. Nolte, Villanova, Pa., assignor to Kingmann-White, Inc., Placentia, Calif.

Filed June 7, 1971, Ser. No. 150,639

Int. Cl. G01l *13/02*

U.S. Cl. 73—407 R **10 Claims**



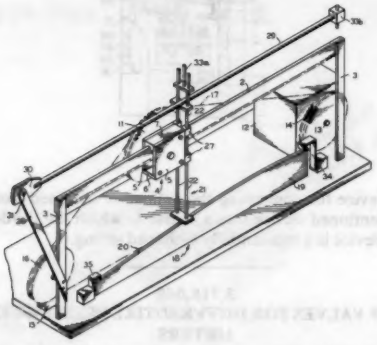
A differential pressure flow meter is provided with a relief valve for preventing inaccuracics from being induced in the readout of the meter by pressure reversals in the pipe. The flow meter has a bellows partitioning the meter casing into high and low pressure chambers at opposite sides of the bellows. In one embodiment, a flow passage in the casing extends between the high and low pressure chambers and a ball valve element is mounted in the flow passage with a portion of its surface confronting the low pressure chamber and biased against a shoulder by a spring. The ball is disengaged from its seat when the pressure in the low pressure chamber exceeds the pressure in the high pressure chamber to permit rapid equalization of pressure in the two chambers. In another embodiment, a disc-like valve element is mounted on the bellows for displacement with the bellows. The valve element is biased against a shoulder surrounding a passage in the bellows and is opened when a pressure reversal causes the bellows to contract toward the high pressure chamber. A stem on the valve element is adapted to engage an actuator in the high pressure chamber to open the valve and equalize the pressure in the two chambers.

3,718,049

AUTOMATIC PROGRAM GENERATOR AND SIGNALLER SYSTEM

Charles Hanft, Hicksville, N.Y., assignor to The F. and M. Schaefer Brewing Co., Brooklyn, N.Y.

Filed May 14, 1971, Ser. No. 143,438
Int. Cl. F16h *27/02*
U.S. Cl. 74—89 **11 Claims**



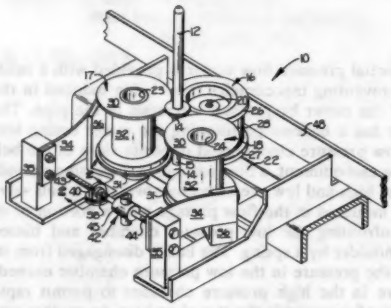
A program cam assembly is mounted on a base. Mounted above the program cam assembly for longitudinal movement thereover is a carrier assembly carrying a cam follower assembly. The cam follower assembly has a cam follower which traverses a program surface of a program cam, thereby imparting vertical movement to the cam follower assembly. This vertical movement produces at least two separate program signals, The cam follower assembly is automatically operated to sequentially index a plurality of program cams beneath the cam follower.

3,718,050

APPARATUS FOR ROTATING SPINDLE AT HIGH SPEED

Norbert J. B. Verhellen, Hickory, N.C., assignor to Regal Manufacturing Company, Hickory, N.C.

Filed Jan. 19, 1971, Ser. No. 107,629
Int. Cl. F16h *13/02*; D01h *7/46, 7/92*
U.S. Cl. 74—206 **4 Claims**



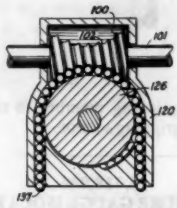
An apparatus for rotating a spindle at high speed comprising three rollers encompassing the spindle. The rollers are positioned to frictionally engage the driving whorl of the spindle to axially and rotatably support the same, and the diameters of the three rollers are substantially greater than the effective diameter of the spindle whorl such that the spindle is rotated at a multiple of the speed of the rollers. In one embodiment, a drive belt engages one of the rollers to effect rotation of the spindle and other two rollers, and in a second embodiment a circular band surrounds the three rollers and engages the drive belt. In both embodiments, means are provided for resiliently biasing the rollers into firm frictional engagement with the rollers.

3,718,051

POWER TRANSFER SYSTEM

Francis B. Eck, 605 Brookline Dr. S.E., Marietta, Ga.

Filed Feb. 1, 1971, Ser. No. 111,450
Int. Cl. F16h *13/04, 1/04, 1/16*
U.S. Cl. 74—216.3 **10 Claims**



A power transfer system consisting of sprocket housings whose ports are inter-connected by flexible or formable or pre-shaped tubes, the tubes and the sprocket housings forming an endless track through which a plurality of juxtaposed spheres or balls are passed. The rotation of a sprocket in one housing causes transfer of the balls in their continuous path so as to rotate the sprocket in the other housing. Each sprocket is bifurcated and an arcuate member is placed adjacent the sprockets to facilitate the transfer of the balls from the housings to the tubes. A quick disconnect assembly is provided between the ports of each housing and the tubes, by which the tubes may be readily disconnected. The inadvertent discharge of the balls from the tubes and the housings is prevented by check members. The sprocket of the present invention cooperates, in certain embodiments with a pinion or a rack or a worm gear or a planetary arrangement.

3,718,052

GEAR STRUCTURE AND METHOD OF MAKING THE SAME

Wiliam A. Barr, Milwaukee; Edwin C. Hahlbeck, Greendale, and Ferdinand L. Heine, Milwaukee, all of Wis., assignors to Milwaukee Gear Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 10,483, Feb. 11, 1970. This application April 5, 1971, Ser. No. 131,241
Int. Cl. F16h *55/06*; B21d *53/28*
U.S. Cl. 74—462 **12 Claims**

The manufacture of racks includes mounting of the rack elements relative to a meshing gear using as a reference only the operating pitch surfaces of the rack elements. Rack elements with different body dimensions mounted end to end to form a smooth rack. Rack elements mounted side-by-side with

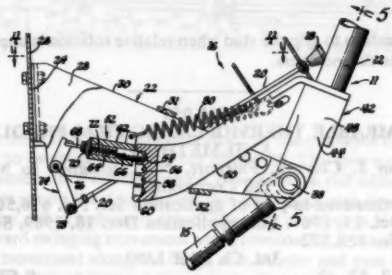
nonparallel standard pitch surfaces effect new modifications in axial tooth thickness. Rack elements with varying discrepancies in axial tooth thicknesses mounted together or separately produce a correct spur rack.

3,718,053

TILT STEERING WHEEL MECHANISM

James J. Cinadr, Parma, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 4, 1971, Ser. No. 186,097
Int. Cl. B62d *1/18*
U.S. Cl. 74—493 **2 Claims**



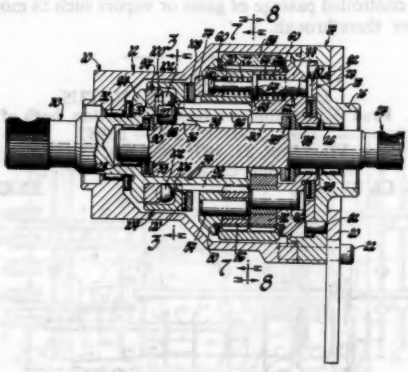
A tilt steering wheel mechanism having a column, the lower end of which is connected to a remotely controlled adjuster mechanism having a positioning member and a slidable bolt cooperating with the positioning member permitting the column to be pivoted to predetermined points about a horizontal axis for locking the wheel in an adjusted position.

3,718,054

LOAD RESPONSIVE TORQUE TRANSMISSION MECHANISM

Ralph W. Perkins, and Russell L. Morden, both of Lansing, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 7, 1971, Ser. No. 187,455
Int. Cl. F16h *5/54, 57/10*
U.S. Cl. 74—751 **4 Claims**



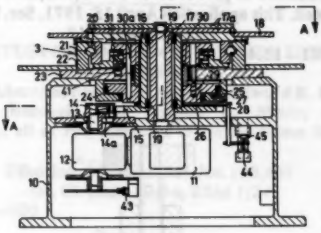
A load responsive torque transmission mechanism adapted to normally transfer torque at a unitary ratio and to automatically shift to a higher transmission ratio when the applied torque exceeds a predetermined minimum magnitude, the mechanism including an input shaft, an output shaft, a planetary gear train disposed therebetween, a pawl supported on the output shaft for unitary rotation therewith and for radial movement relative thereto between an extended position seated in a groove in the input shaft and directly coupling the input and output shafts and a retracted position, a plurality of spherical rolling elements disposed about the output shaft on opposite sides of the pawl such that radial movement of the latter effects lateral movement of the rolling elements, and cams associated with the rolling elements responsive to lateral movement thereof to impart thereto an axial component of motion. When excessive torque is applied to the input shaft the pawl is cammed out of the groove and the concurrent axial motion of the rolling elements actuates a plurality of lock pins which ground the planet carrier of the planetary gear train thereby to establish torque transmission through the gear train at a ratio exceeding unity.

3,718,055

ROTARY INDEXING MACHINE

Heinz Maier, 7101 Sulzbach, Germany, assignor to Fischer-Brodbeck G.m.b.H. Prazisionsteile-Fabrik, Weinsberg, Germany

Filed Dec. 8, 1970, Ser. No. 96,065
Claims priority, application Germany, Dec. 11, 1969, P 19 62 097.4
Int. Cl. B23b *29/32*
U.S. Cl. 74—826 **11 Claims**



A rotary indexing machine in which for alternately turning the turntable one step in its peripheral direction and locking it between the steps the turntable is only rotatably mounted and immovable in its axial direction . This is effected by means of three crown gears, the first of which is secured to the turntable and surrounds a second stationary crown gear of the same pitch, while a third crown gear is alternately movable in opposite axial directions for simultaneously engaging it with the first and second gears so as to lock them to each other and thus to lock the turntable during its stopping periods and for disengaging it from the first and second gears during the turning movements of the turntable.

3,718,056

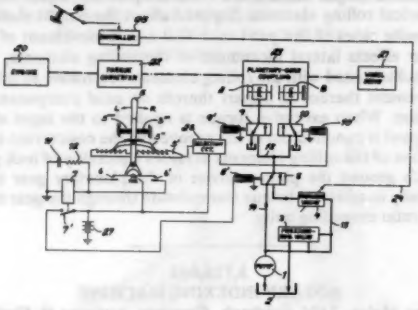
GEAR SHIFT CONTROL FOR AUTOMOTIVE TRANSMISSIONS AND THE LIKE

Winfried Felder, Aulendorf, and Walter Kuhn, Friedrichshafen, both of Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Germany

Filed Aug. 30, 1971, Ser. No. 176,180
Claims priority, application Germany, Sept. 1, 1970, P 20 43 196.3
Int. Cl. B60k *21/02, 29/00, 33/00*
U.S. Cl. 74—865 **6 Claims**

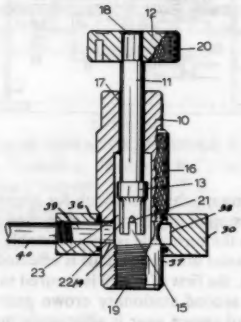
A drive-establishing clutch or brake of an automotive power train, actuated hydraulically upon a shifting into gear, is connected through an individual control valve to a high-pressure

duct communicating alternately with a source of constant hydraulic pressure and a source of variable hydraulic pressure dependent on such operating parameters as load and engine



speed. As the gear-shift lever ist moved out of central position, a switch is closed to measure a short time interval after which the system switches from variable to constant supply pressure.

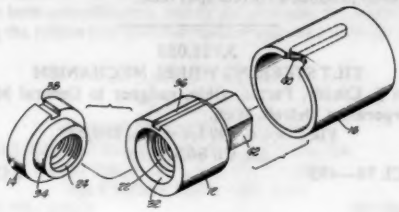
3,718,057
HIGH PRESSURE BLEED VALVE TOOL
Robert F. Berchtold, 3350 West 41st Street, Erie, Pa.
Continuation-in-part of Ser. No. 785,983, Dec. 23, 1968, abandoned. This application April 15, 1971, Ser. No. 134,221
Int. Cl. B60c *25/18*
U.S. Cl. 81—15.4 **2 Claims**



A tool for removing the check valve core, which is removably and threadably received in a valve casing of an inflation valve. The valve has a hollow barrel with a threaded stem therein. The barrel is made in such a way that it may be threadably received in the casing and the stem may be slid into engagement with the valve core so that the core can be threadably removed from the casing. There is ample room inside the barrel to receive the valve core and a bleed hole is formed in the side of the barrel to allow the air from the casing to escape after the valve is removed so that the valve cover will not become a projectile when the tool is removed.

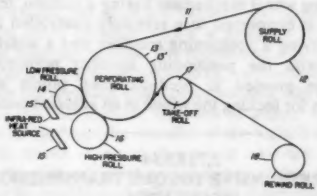
3,718,058
CAMLOCK THREADED STUD ACTUATOR
William Felix Jones, Jr., Houston, Tex., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed July 16, 1971, Ser. No. 163,183
Int. Cl. B25b *3/50*
U.S. Cl. 81—53.2 **12 Claims**

A threaded stud actuator including two members having threaded bores adapted to be easily threaded in alignment along a threaded stud and having complementary camming structure between the members to cause the threaded bores of



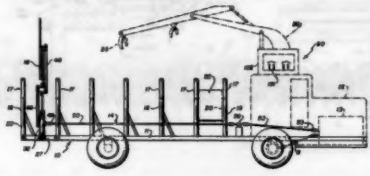
the members to grip the stud when relative rotation is imposed between the members.

3,718,059
PERMEABLE THERMOPLASTIC FILM PRODUCT AND METHOD
William J. Clayton, Fairport, N.N.Y., assignor to Mobil Oil Corporation
Continuation-in-part of application Ser. No. 676,560, Oct. 19, 1967. This application Dec. 18, 1969, Ser. No. 886,272
Int. Cl. B26f *1/00*
U.S. Cl. 83—2 **9 Claims**



The present invention relates to a thermoplastic film product and a method employed to increase the permeability of thermoplastic films by pressing such films, utilizing a resilient surface pressure roller, into contact with a discontinuous surface of a coated abrasive material whereby highly permeable films are produced which permit controlled passage of gases or vapors such as moisture vapor therethrough.

3,718,060
LOG-CUTTING APPARATUS
Fred W. Carlton and Jesse W. Carlton, both of Rte. 1, Oxford, Wis. 53952
Filed Sept. 21, 1970, Ser. No. 73,965
Int. Cl. B27b *5/10*
U.S. Cl. 83—84 **12 Claims**



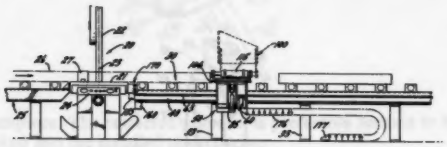
A mobile log-cutting device which utilizes a pivotally actuated cutting means which is readily and safely engaged and disengaged from the logs being cut during a log-cutting operation.

3,718,061

STOP GAGE FOR BAND SAW CONVEYOR OR THE LIKE

John P. Wilkin, Schaumburg, Ill., assignor to Armstrong-Blum Manufacturing Company, Chicago, Ill.

Filed June 29, 1970, Ser. No. 50,532
Int. Cl. B26d 7/16
U.S. Cl. 83—201 8 Claims



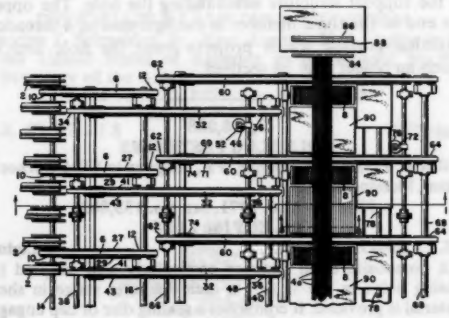
A dead stop for positioning stock on the conveyor of a band saw to establish a desired cut off length. The stop member is mounted on a carriage which rides along a rail adjacent the conveyor on the downstream side and which may be clamped to the rail at a desired point. The stop member is hinged for upward swinging movement with provision for relative retreating movement along the hinge axis. A cam and cam follower are interposed between the stop member and the carriage with a fluid actuator for retracting and swinging up the stop member to permit a severed work piece to be transported along the conveyor for discharge. Upon impact the stop member retreats against the force applied by the actuator followed by prompt restoration to a reference position. The movement of the carriage and the clamping to the rail as well as the swinging of the stop member are all controlled from a control station at the band saw where the position of the stop member is accurately and continuously indicated on a calibrated tape which is subject to continuous tensioning and take-up by a negator spring.

3,718,062

PRODUCT HANDLING SYSTEM FOR COOLING BEDS

Martin Gilvar, Westboro, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed April 26, 1971, Ser. No. 137,185
Int. Cl. B26d 3/16; B65g 37/00
U.S. Cl. 83—268 17 Claims



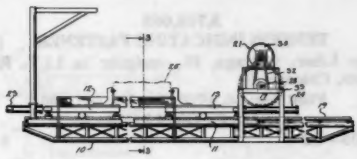
A mechanism for maintaining hot rolled bars in spaced parallelism from the time they leave the carryover racks until deposited on grooved runoff rolls where the same spacing of the bars is maintained. The spacing on the runoff rolls will match the spacing of the notched knives that cut the bars.

3,718,063

CANT-PRODUCING SAWMILLS

Thomas F. Meis, P.O. Box 27, Mondovi, Wis. 54755

Filed Oct. 14, 1970, Ser. No. 80,574
Int. Cl. B27b 7/00, 29/10
U.S. Cl. 83—471.2 1 Claim



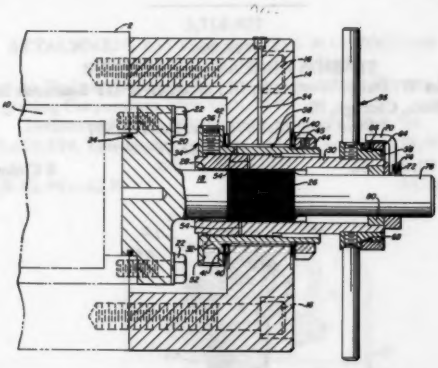
An improved machine for sawing rough logs into so-called cants, or logs that have been slabbed to provide a partially finished log which is adapted to be fed into a gang saw to produce flat boards, which machine includes a pair of parallel, independently laterally-movable circular saw blade units together with a log-retaining headblock assembly which is also laterally adjustable to permit the operator to select the size of the cant produced, and also including means for adjusting the position of a somewhat crooked or imperfect log relative to said saw blades to ensure the production of consistently uniform, high-quality cants.

3,718,064

APPARATUS FOR ADJUSTMENT OF SIDE TRIMMER KNIFE

Eugene V. Abarotin, Franklin Township; Edward R. Bollinger, Delmont Borough, and Thomas E. Nicely, Franklin Township, all of Pa., assignors to United States Steel Corporation

Filed Jan. 21, 1971, Ser. No. 108,489
Int. Cl. B23d 19/04; B26d 1/24
U.S. Cl. 83—502 5 Claims



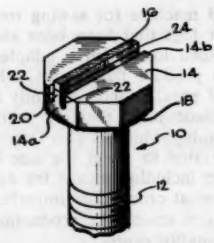
Apparatus consists of a differentially threaded sleeve surrounding and in threaded engagement with an adjustment rod which in turn is connected with an axially adjustable side trimmer knife-mounting in a side trimmer housing. An elongated nut, which is restrained from axial movement, is circumferentially mounted around the sleeve in threaded engagement therewith. Means are provided for selectively restraining the sleeve from axial movement relative to the adjustment rod during rotation of the sleeve. This permits the adjustment rod to move axially at a relatively high rate for coarse adjustment of the side trimmer knife. When the sleeve is free of axial-movement restraint during rotation, it moves axially in one direction while the adjustment rod moves axially in the op-

posite direction depending upon the direction of rotation of the sleeve. This causes the adjustment rod to move at a relatively low rate for fine adjustment of the side trimmer knife. The fine adjustment rate of movement is equal to the difference between the rate of axial movement of the sleeve and the rate of axial movement of the adjustment rod.

3,718,065
TENSION INDICATING FASTENER

Theodore Liber, Chicago, Ill., assignor to I.I.T. Research Institute, Chicago, Ill.

Filed Dec. 24, 1970, Ser. No. 101,298
Int. Cl. G01d 21/00
U.S. Cl. 85—62 **5 Claims**

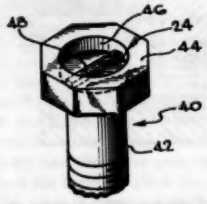


A bolt having a shank and integral head has a strip of photoelastic material mounted on the head for manifesting in the form of photoelastic fringes linearly related to bolt tension the bending stresses created in the head during loading of the bolt. To determine the tension in the bolt during or after loading, polarized light is directed toward the photoelastic strip and reflected light from the strip is analyzed to measure fringe order. The fringe order is related to the amount of bending stresses in the head of the bolt by a predetermined calibration curve, the bending stresses being linearly related to bolt tension.

3,718,066
TENSION INDICATING FASTENER

James W. Daily, Westmont, Ill., assignor to IIT Research Institute, Chicago, Ill.

Filed Dec. 28, 1970, Ser. No. 101,597
Int. Cl. G01d 21/00
U.S. Cl. 85—62 **8 Claims**



A bolt having a shank and integral head has a strip of photoelastic material mounted on the head for manifesting in the form of photoelastic fringes linearly related to bolt tension the bending stresses created in the head during loading of the bolt. To determine the tension in the bolt during or after loading, polarized light is directed toward the photoelastic strip and reflected light from the strip is analyzed to measure fringe order. The fringe order is related to the amount of bending stresses in the head of the bolt by a predetermined calibration curve, the bending stresses being linearly related to bolt tension.

3,718,067
FASTENING SYSTEM

Artur Fischer, 219 Altheimer Str., D–7241 Tumlingen, Germany

Filed Dec. 15, 1970, Ser. No. 98,348
Claims priority, application Germany, Dec. 27, 1969, P 19 65 026.1; Jan. 30, 1970, P 20 04 162.7
Int. Cl. F16b 13/06
U.S. Cl. 85—68 **6 Claims**

A flat first member has two major surfaces and is provided on its leading end portion with cutting edges. for drilling holes in a support structure. A pair of elongated ribs are each provided on one of the major surfaces extending between the trailing and leading end portions of the first member and located at opposite sides of a center line connecting the end portions. The ribs have respective inner edges which face towards the center line and which converge over at least a part of their length at an acute angle towards the leading end portion. An elongated second member has a front portion an axial slot of which can matingly but releasably receive at least the trailing end portion of the first member so that when by engagement of the rear portion of the second member with a tool the two members are jointly rotated, the cutting edges of the first member will drill a hole in the support structure whereupon the second member is released from the first member and withdrawn from the hole. An elongated third member is insertable into the thus-drilled hole and has an expandable portion provided with an axial slit so configurated that when it receives forcibly the trailing end portion of the first member, it is spread apart in locking engagement with the material of the support structure surrounding the hole. The opposite end of the third member is configurated as a threaded fastening portion which projects from the hole and to which an object may be secured.

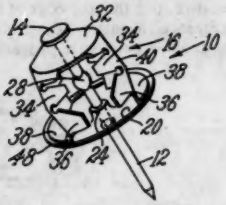
3,718,068
HOLE PLUG FASTENERS

LaRoy B. Passer, Wyomissing, Pa., assignor to USM Corporation, Flemington, N.J.

Filed April 14, 1971, Ser. No. 133,802
Int. Cl. F16b 13/06
U.S. Cl. 85—71 **3 Claims**

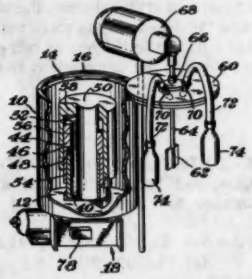
A composite blind fastener particularly well adapted for closing holes in the ⅛ to 1⅛ inch diameter range in sheet material is provided. It comprises a sealing disc or cap engageable with one side of a workpiece having a hole to be plugged, a headed mandrel extending through the cap and the hole in the workpiece, and an axially collapsible, radially expansible anchoring or clamping member secured on the mandrel for engagement with the blind side of the disc. Advantageously, the anchoring member may be stamped from a piece of sheet stock and formed with an initial body diameter slightly smaller than the hole to be plugged. Retraction of the mandrel head

causes the inserted member to contract axially and be radially enlarged to clamp the disc in hole closing relation against the



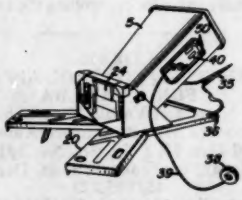
workpiece. The retracted mandrel is preferably formed to be locked into the installed plug fastener.

3,718,069
MIXER-MOLDER
John J. Plomer, Midland, Hazen V. Doan, Auburn, and Thomas E. Slykhouse, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Jan. 28, 1966, Ser. No. 524,375
Int. Cl. C06d *1/08*
U.S. Cl. 86—20 D **3 Claims**



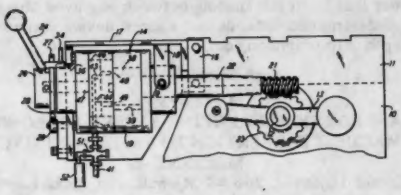
The invention is a mixer-molder unit particularly suitable for use in the blending and in situ forming of solid propellant grains. Power supply, drive means and mix component supply means are exterior to the unit. The mixing container inside of the unit can be the actual motor case for holding a propellant grain.

3,718,070
EXPENDABLE LAUNCHER MUNITION
Clayton J. Schneider, Jr., East Aurora, N.Y., assignor to the United States of America as represented by the Secretary of the Army
Filed Apr. 23, 1971, Ser. No. 136,695
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.8 **3 Claims**



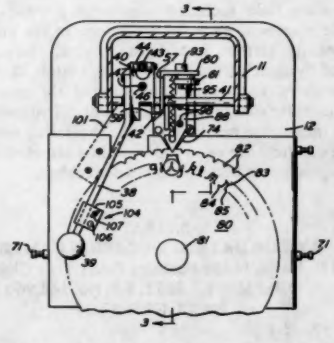
An apparatus and method for launching munitions to a target site from an expendable launching means. The expendable launcher is designed so it is not capable of being re-used.

3,718,071
POWER FEED FOR THE TABLE OF A MACHINE TOOL OR THE LIKE
James P. Steibel, Sturtevant, Wis., assignor of a fractional part interest to Samuel J. Ashelford, Alexandria, Va.
Filed Oct. 29, 1971, Ser. No. 193,805
Int. Cl. B23c *9/00*; B23q *5/26*
U.S. Cl. 90—21.5 **11 Claims**



A power feed for the table of a machine tool which has rotatable shaft for moving the table. A power source is applied to the shaft through a drive member on the power source for engaging a driven member on the shaft, and thereby powering the table feed. The power source is shown pivotally mounted on the machine tool for engagement and disengagement of the drive member with the driven member so that the table can be either power driven, when the source is engaged, or it can be manually moved, when the power source is disengaged. A single control handle governs the pivotal action for the drive engagement mentioned, and the same single control handle governs the operation of the power source. The control handle has members connected thereto for effecting the pivotal action for drive engagement or disengagement, and the arrangement is such that the drive is engaged prior to the time that the power source is energized, such energizing being effected by movement of the handle beyond the position where the drive member is pivoted into engagement with the driven member.

3,718,072
ATTACHMENT KIT FOR COPYING MACHINE FOR ENGRAVING JEWELRY RINGS
George Beriant, Bellerose, N.Y., assignor to New Hermes Engraving Corporation, New York, N.Y.
Division of Ser. No. 887,947, Dec. 24, 1969, Pat. No. 3,608,429. This application Sept. 1, 1971, Ser. No. 176,960
Int. Cl. B23c *1/16*
U.S. Cl. 90—62 R **3 Claims**



An attachment kit for modifying a copying and engraving machine that utilizes a pattern carrier of a standard diameter so that it can copy indicia from a plurality of circular pattern

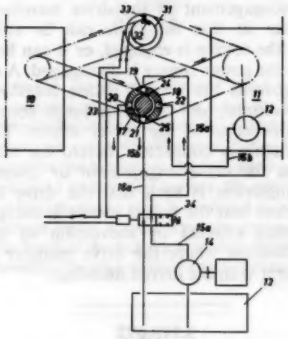
carriers of different diameters. An adapter bracket properly positions the circular pattern carriers so that they can be engaged by a tracing tool. Additionally, the attachment kit includes a locking member that cooperates with the locking member on the machine that normally engages the standard pattern carrier so that the non-standard pattern carriers can be locked in position so that the indicia thereon can be copied and engraved. Furthermore, the attachment kit includes a member that limits the spacing between engraved characters to a predetermined distance and a screw device that controls the depth of the engraving cut.

3,718,073

MEANS FOR SYNCHRONIZING A SPEED-FOLLOWING MACHINE IN RELATION TO A SPEED-SETTING MACHINE

Alf Harald Liljeqvist, 260 44 Mjohult, and Folke Liedholm, Havertgatan 33, Halsingborg, both of Sweden

Filed June 28, 1971, Ser. No. 157,131
Int. Cl. F15b *11/22*
U.S. Cl. 91—412 **4 Claims**



When two machines are working in tandem to perform successive working on a component there is an obvious need for synchronizing the running of the two machines, so that the second one is prepared to receive the component, when the first machine has terminated its working step thereon. An exact timing of the operation is obtained if the second machine is driven hydraulically and the conduits conveying the pressure fluid included a governing valve having two rotatable members, each driven by one of the machines and the conduits further include a solenoid valve, which is governed by signals from an indicating switch, likewise having two members, each driven by one of the machines. The governing valve determines the amount of hydraulic fluid supplied to the second machine and the indicating switch ensures that the conduits are open only within a selected range of angular displacement between the two machines.

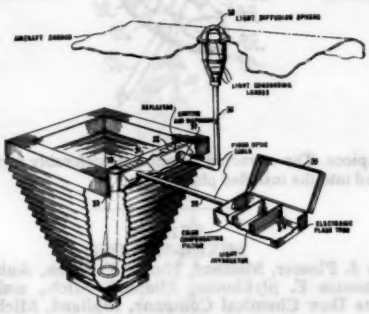
3,718,074

COLOR DATA ACQUISITION CAMERA

Richard H. Davis, 14406 Fontaine Court, Dale City, Va.

Filed May 13, 1971, Ser. No. 142,960
Int. Cl. G03b *17/24*
U.S. Cl. 95—1.1 **4 Claims**

This invention is a camera for use in making true color photographs which is especially useful in aerial and space photography applications. In accordance with the invention, the camera provides a gray scale reference image for each scene photographed. This reference image is exposed on an edge of the film by means of a light characteristic reference image negative disposed in close proximity to the film surface and fiber optic light transmission means which transmits light energy to the negative such that the edge of the film is exposed through the reference negative. Edge disposition of the reference image enables automatic processing of true color



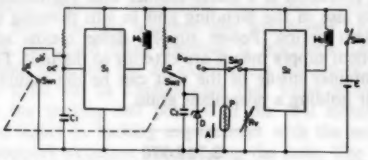
prints from the negative. The reference image may be made with a light source located in or near the camera and/or with light from the natural or artificial scene-illuminating source. A spot representing the density of the scene being photographed may be exposed adjacent to the one or two gray scale images by light passing through the camera lens and an internal lens system.

3,718,075

EXPOSURE CONTROLLING DEVICE FOR A CAMERA

Mitsutoshi Ogiso, and Tadashi Ito, both of Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1970, Ser. No. 91,889
Int. Cl. G03b *9/62, 7/08*
U.S. Cl. 95—10 CT **6 Claims**



In the disclosed camera exposure control, a capacitor charged to a predetermined potential, is discharged for a predetermined time at a rate established by light passing through a preset iris in the lens of the camera. After the predetermined time, the residual charge across the capacitor serves as a memory value for controlling the camera's shutter.

3,718,076

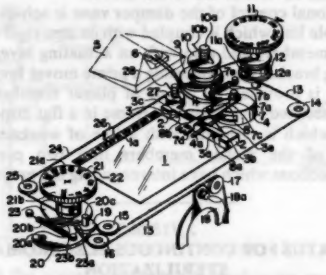
SHUTTER SPEED CONTROL APPARATUS FOR A CAMERA

Hiroshi Ueda, Nara, and Yoshio Kuramoto, Sakai, Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha

Filed Dec. 23, 1970, Ser. No. 101,062
Claims priority, application Japan, Dec. 29, 1969, 45/105,223
Int. Cl. G01j *1/42*; G03b *17/20*
U.S. Cl. 95—10 C **7 Claims**

A shutter control is adjustable to the lowest speed that will provide a non-blurred photograph when a shutter speed setting member is positioned at an automatic exposure position wherein the exposure setting is determined

as a function of shutter speed diaphragm aperture and film speed settings. The viewfinder displays both indications of the intensity of light and the exposure condition set by the shutter control apparatus. The diaphragm aperture setting member is also set to a setting which represents the difference between a maximum setting and a pre-set setting in accordance with the rotation angle of a rotatable ring in the lens barrel of the camera.



3,718,077

TRANSISTORIZED CONTROL DEVICE FOR CAMERA SHUTTERS INCLUDING EXPOSURE SETTING AND SHUTTER DELAY TIMING MEANS

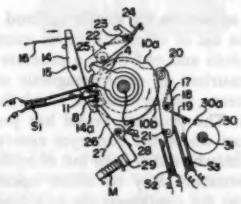
Shigeo Ono, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

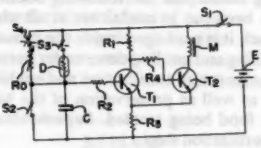
Continuation of Ser. No. 536,917, March 3, 1966, abandoned. This application Nov. 24, 1969, Ser. No. 872,476

Claims priority, application Japan, March 31, 1965, 40/18832

Int. Cl. G03b 7/08, 9/64

U.S. Cl. 95—10 CT **7 Claims**





An apparatus for electronic exposure control in photographic cameras in which both the exposure time and the duration of a delayed action, which can be switched on as desired, are electronically controlled. A single capacitor is used for both delay timing networks and a single electromagnet serves as the stopping control. Current flows from a source only when the shutter button is released.

3,718,078

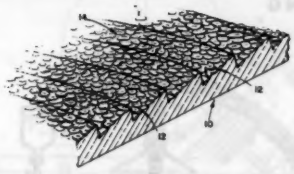
SMOOTHLY GRANULATED OPTICAL SURFACE AND METHOD FOR MAKING SAME

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 31, 1970, Ser. No. 103,199

Int. Cl. G02b 3/08

U.S. Cl. 95—49 **20 Claims**



A method for forming a light-scattering surface in which the surface, made from a soluble material, is sprayed with droplets of a volatile solvent. After the droplets evaporate, the surface is found to be smoothly perturbated. Molds can be made of the perturbated surface from which duplicates can be pressed in large numbers and in a variety of materials. A surface perturbated according to the present process is useful in optical articles for randomly distributing, within a predetermined solid angle, light incident on said surface. Applications for the light-scattering surface include: focusing screens; fresnel condenser optics; and, non-glare windows.

3,718,079

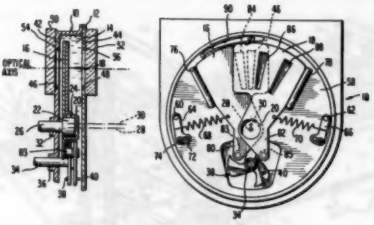
SHUTTER ASSEMBLY FOR PHOTOGRAPHIC EQUIPMENT

David L. Fuller, Atlanta, Ga., assignor to Scripto, Inc., Atlanta, Ga.

Filed Oct. 8, 1971, Ser. No. 187,772

Int. Cl. G03b 9/14

U.S. Cl. 95—62 **14 Claims**

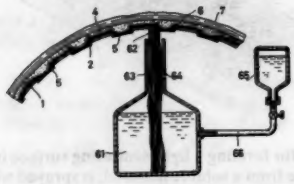


A between-the-lens shutter which includes a sealed casing containing a liquid of selected index of refraction to couple two optical elements of the camera lens and which also houses a pair of shutter blades. The shutter blades are mounted to pivot about an axis offset with respect to an aperture through the casing and are controlled by a common cocking-releasing cam. The shutters are cocked sequentially and released simultaneously. A high shutter speed effect is achieved by allowing both shutter blades, when released to return simultaneously toward their normal or rest positions and a slow shutter speed effect is achieved by delaying the return of the second-cocked shutter blade when the two blades are released simultaneously. The delayed return is achieved by a latch made operative by slightly shifting the pivot mounting for the two shutter blades, the latch temporarily holding the second shutter blade in cocked position and being disengaged from this shutter blade in response to movement of the other shutter blade to its rest position after both blades have been simultaneously released by the cam.

3,718,080
DEVICE FOR DEVELOPING TWO-COMPONENT DIAZO PHOTOSENSITIVE MATERIAL

Yoshiro Yamamoto, Nagoya, and Michio Tajihi, Osaka, both of Japan, assignors to Kabushiki Kaisha Yamamoto Kogyosho, Nagoya, Japan

Filed Nov. 3, 1971, Ser. No. 195,367
Claims priority, application Japan, Nov. 19, 1970, 45/102259
Int. Cl. G03d 3/12
U.S. Cl. 95—94 G 7 Claims

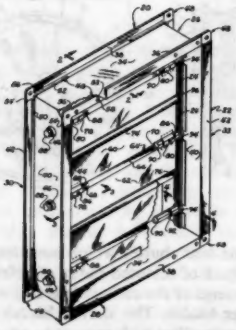


A dry developing device for two-component diazo photosensitive material, comprising a heating chamber and a developing roller disposed therein. Liquid developer is applied to the inner peripheral surface of the developing roller gradually, so that it is gasified by the heat from the heating chamber for producing a gaseous developer layer on the outer peripheral surface of the developing roller where the photosensitive material is delivered and developed.

3,718,081
CONTROL DAMPER CONSTRUCTION

James R. Root, Independence, Mo., assignor to Ruskin Manufacturing Company, Grandview, Mo.

Filed Nov. 4, 1970, Ser. No. 86,697
Int. Cl. F24f 13/00
U.S. Cl. 98—110 13 Claims



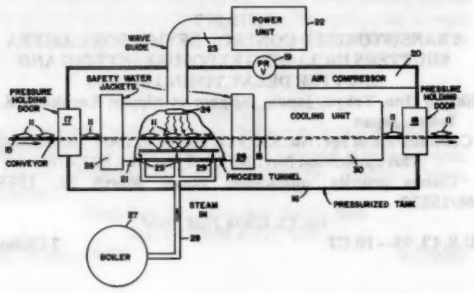
A control damper is provided with a pair of transversely polygonal axle members for mounting the damper vane on a supporting frame. The axle members are received within complementally polygonal channels at each end of the damper vane and are held in the channels by retainer components which bridge the respective channels. When the axle members are inserted into the channels, the retainer components are placed under tension to assure a tight interengagement of the axle members with the vane. A section of the frame adjacent each axle presents an integral outturned collar which serves as a bearing surface for a bushing received upon the end of each axle member. A multiple-flanged sealing member disposed on the inside of the frame provides for a tight fit between the vane and the sealing surface of the frame while reducing the tolerance requirements between the vane and the frame. The frame is provided with heavy, relatively rigid corner braces which provide added strength to the frame structure. The frame sections are rigidly secured to the braces by deforming a portion of the relative malleable frame section material into appropriate cavities in the corner braces.

Directional control of the damper vane is achieved through a reversible link which is coupled with an arm rigid with one of the axle members and also with an actuating lever. A motor mounting bracket for supporting a prime mover for the actuating lever is provided by a pair of planar members, each of which is secured to the damper frame in a flat disposition and each of which is provided with a line of weakness to allow bending of the planar members into two perpendicular bracket sections which have interengaging tab projections.

3,718,082
APPARATUS FOR CONTINUOUS ELECTROMAGNETIC STERILIZATION

Samuel P. Lipoma, 825-19th Place, Delano, Calif.

Filed April 20, 1971, Ser. No. 135,629
Int. Cl. A23l 3/04
U.S. Cl. 99—470 11 Claims



Method and apparatus for sterilizing food in a continuous process with the aid of electromagnetic energy. A conveyor conducts food into and out from a pressure vessel that encloses and pressurizes an electromagnetic sterilizing tunnel and a cooling means, through both of which the conveyor conducts the food. The pressure vessel has pressure retaining means at the loci where the conveyor enters and leaves the tank. The food may be either in or out of containers; if in containers, the containers may be either open or closed and sealed, so long as the containers are of a type transparent to the electromagnetic energy being used. If the containers are not closed, a container sealing device is interposed between the sterilizing tunnel and the following cooling means. If the food has not been put in containers at all when it enters the pressure vessel, it is packaged inside the pressure vessel. Having the sterilizing and cooling done under pressure enables the use of high temperature sterilization and enables prevention of overcooking as well as preservation of the basic texture and shape of the food being treated. Superheated steam may be used in the sterilization step.

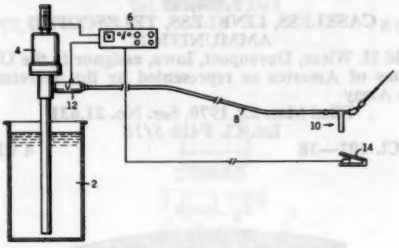
3,718,083
POULTRY PROCESSING APPARATUS

Roger E. Walters, Glendale, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Filed May 24, 1971, Ser. No. 146,066
Int. Cl. A23b 1/16
U.S. Cl. 99—532 6 Claims

Apparatus is shown for injecting a material into a poultry product whereby the injection needles may be provided at a

location remote from the pump and shut-off valve controlling the flow of material to the injecting apparatus. The injection apparatus consists of a needle assembly having the needles provided at a predetermined angle to the handle on the needle assembly such that when the operator holds the injection apparatus in the normal position, the needles are positioned to prevent the injection material from leaking or dripping therefrom. Further, since there is substantially no leakage of injection material from the needles, it is possible to inject birds with a desired quantity of fluid within very low tolerances.

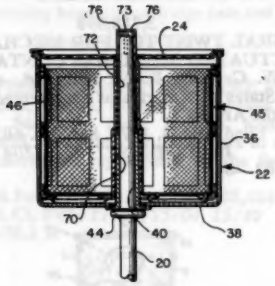


3,718,084

COFFEE MAKER BASKET AND FILTER

Dale E. Bufkin and Willard G. Murphy, Macon, Mo., assignors to McGraw-Edison Company, Elgin, Ill.

Filed Nov. 9, 1971, Ser. No. 197,081
Int. Cl. A47j *31/08*
U.S. Cl. 99—312 8 Claims



A basket filter for a percolator type coffee maker having a vessel and percolator tube supported therein, the basket filter having a stem which fits loosely over the tube until restrained thereon by the coffee maker basket or by shoulders on the tube, the top end of the stem extending along the tube and being of plastic or other flexible insulating material and having resilient tabs defined thereon which can be squeezed against the underlying tube for gripping same and simultaneously removing the tube, coffee maker basket and the basket filter from the vessel.

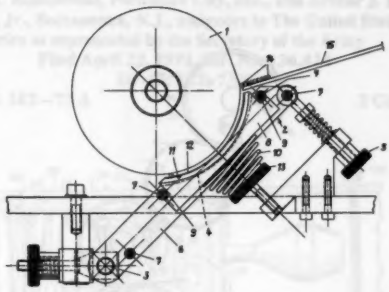
3,718,085

APPARATUS FOR PRINTING ON CYLINDRICAL ARTICLES

Georges Perret, Bergerac, France, assignor to Geneco Inc., Panama, Geneva, Switzerland

Filed Jan. 26, 1971, Ser. No. 109,796
Claims priority, application Switzerland, Jan. 28, 1970, 1210/70
Int. Cl. B41f *17/22*
U.S. Cl. 101—40 3 Claims

A printing machine for automatically printing cylindrical articles, such as tubes, has a stereotype on the cylindrical surface of a rotatable drum. A member having a surface in the form of a sector of a cylinder is floatably mounted on a rigid orientable cradle. Spring means urge the member towards the drum and stop means on the cradle cooperate with the member to define a rest position in which the said surface is concentric to the drum and separated therefrom by a gap smaller than the diameter of the articles. During printing, the articles roll one by one over the surface of the member which, by displacement, accomadates for irregularities in the shape of the articles.

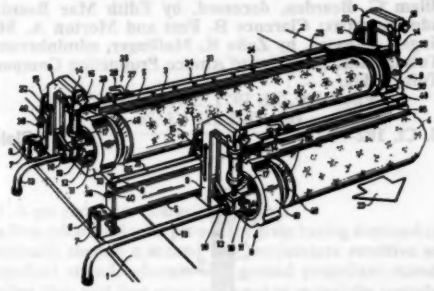


3,718,086

SCREEN PRINTING MACHINE WITH ADJUSTABLE BRIDGE

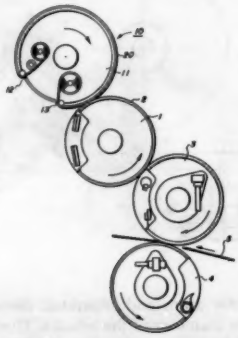
Jacobus G. Vertegaal, Boxmeer, Netherlands, assignor to Stork Amsterdam N.V., Amstelveen, Netherlands

Filed June 30, 1970, Ser. No. 51,043
Claims priority, application Netherlands, July 9, 1969, 6910509
Int. Cl. B41f *15/04*; B41l *13/00*
U.S. Cl. 101—115 8 Claims



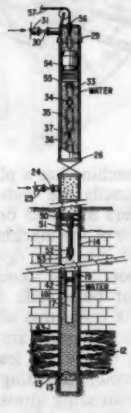
A screen printing machine has a plurality of cylindrical thin-walled screen stencils the ends of which are supported in stencil holders mounted on a bridge extending across the frame halves of the machine with there being a bridge for each stencil. An inner squeegee for dye paste is adjustable with respect to the stencil and is mounted in suspension supports at both ends of the stencil. Each bridge is parallel to its respective stencil and the stencil holders and suspension supports are slideably and lockingly mounted on the bridge. At least one drive gear is drivingly connected through a mating gear on each stencil with the drive gears protruding through the upper surface of a frame half and all the drive gears being drivingly connected to a single drive shaft mounted in a frame half and driven from a single motor.

3,718,087
APPARATUS FOR APPLYING INK AND IMMISCIBLE FLUID TO A PRINTING SURFACE
David A. Sokolov, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Nov. 20, 1969, Ser. No. 878,491
Int. Cl. B41f 7/38, 7/36
U.S. Cl. 101—147 2 Claims



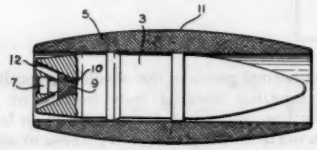
A method and apparatus for applying an ink-water solution to a surface bearing areas of ink receptivity in image configuration and areas of water receptivity in non-image areas to provide a master for printing duplicate copies of subject matter. The ink-water solution is applied to the master surface by an ink field created by an inking member which includes oleophilic material and hydrophilic material interconnected in a selected form. The ink field supplies a predetermined ink-water solution to the master according to the amount and properties of the ink and water respectively absorbed in the two diverse materials included in the inking member.

3,718,088
EXPLOSIVE FRACTURING METHOD
William G. Bearden, deceased, by Edith Mae Bearden, administratrix; Clarence R. Fast and Morton A. Mallinger, deceased, by Zella K. Mallinger, administratrix, Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.
Filed Apr. 23, 1971, Ser. No. 136,776
Int. Cl. E21b 43/26
U.S. Cl. 102—21 7 Claims



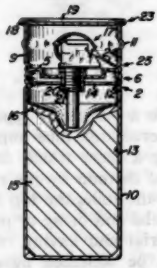
This invention is a method for increasing the permeability of underground formations by injecting a fluid explosive into subsurface crevices and detonating the explosive in these crevices. In particular it relates to the placement of detonators in a particular advantageous way which increases safety and insures more consistent detonation.

3,718,089
CASELESS, LINKLESS, TELESCOPED AMMUNITION
Harold H. Wiese, Davenport, Iowa, assignor to the United States of America as represented by the Secretary of the Army
Filed Mar. 23, 1970, Ser. No. 21,631
Int. Cl. F42b 5/18
U.S. Cl. 102—38 4 Claims



An improved caseless round of ammunition is provided by telescoping a projectile within a compressed molded propellant. The molded propellant is made with a barrel shaped exterior to facilitate pneumatic feeding through flexible tubing. The projectile includes an auxiliary propellant charge and rearwardly extending jet nozzles to initiate propulsion of the projectile immediately prior to ignition of the molded propellant.

3,718,090
INTEGRAL TWIST TOP FOR MECHANICALLY ACTUATED MUNITION CONTAINERS
Douglas W. Gregory, Forest Hill, Md., assignor to the United States of America as represented by the Secretary of the Army
Filed Aug. 4, 1970, Ser. No. 60,879
Int. Cl. F42b 27/02, 27/04
U.S. Cl. 102—64 7 Claims



A container, item to be contained, and method of packaging which enables the packaging of specialty items in a single container to package and protect by conventional and available container manufacturing equipment and technique to reduce the capital equipment requirements and manufacturing and packaging costs. The inventive improvement being the mating of a set of threads formed in the container wall with a set of threads integral with the cap means and a scored structure located in juxtaposition to the threads formed in the container wall. The scored structure being adapted to separate the container into two sections when the container is held at opposite ends in each hand and each end twisted in opposing directions.

3,718,091

AMMUNITION AND A PROCESS FOR MANUFACTURING THE SAME

Paul Theate, 4000 Liege, Belgium, assignor to Fabrique Nationale d'Armes de Guerre, Societe Anonyme, Herstallez-Liege, Belgium

Filed Nov. 20, 1969, Ser. No. 878,396
Int. Cl. F42b *13/48*
U.S. Cl. 102—67 8 Claims

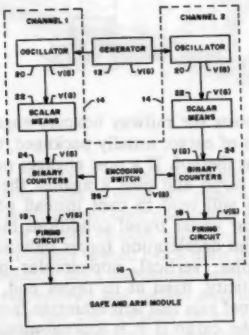
An ammunition such as a defensive grenade comprising an explosive body with preestablished fragmentation, a cartridge case and a fuse, said body acting as a support for the inner wall, the edge rotating band, the cartridge case and the fuse.

3,718,092

BATTERYLESS ELECTRONIC TIME FUZE

Robert L. Pitman, Wayne, Robert H. Haveson, Flanders, Jerry Lyon, Stanhope, Peter Weldon, Flanders, and Henry T. Ranc, Denville, N.J., assignors to the United States of America as represented by the Secretary of the Army

Filed Jan. 11, 1971, Ser. No. 105,464
Int. Cl. F42c *11/02, 15/04, 15/40*
U.S. Cl. 102—70.2 R 15 Claims



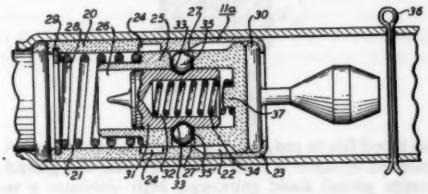
A batteryless electronic time fuze particularly suitable to use in an artillery projectile wherein the fuze comprises in combination: a lightweight pulse-producing generator, the generator producing a pulse at the moment of firing of the projectile; a digital timing network, the timing network energized by, and electronically connected to, the generator; and a safe and arm mechanism, this mechanism also energized by the generator and electrically connected to, and activated at a predetermined time by, said timing network.

3,718,093

FIRING PIN ASSEMBLY

Floyd J. Milanowski, Pocomoke City, Md., and Arthur J. Bowman, Jr., Succasunna, N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed April 22, 1971, Ser. No. 136,424
Int. Cl. F42c *1/06*
U.S. Cl. 102—73 A 2 Claims



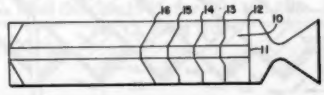
A firing pin assembly, adapted to provide an operable firing mechanism which will function when a practice bomb or similar device is delivered to a target from a plane at any approach angle.

3,718,094

GAS GENERATOR CHARGE WITH DECREASED TEMPERATURE SENSITIVITY

Norman W. Bermender, Waco, Tex., assignor to North American Aviation, Inc.

Filed July 30, 1962, Ser. No. 214,449
Int. Cl. F42b *1/00*
U.S. Cl. 102—101 1 Claim



1. A gas generator charge comprising:

a first cylindrical solid propellant grain having disposed concentrically therein a second less temperature sensitive solid propellant strand, wherein said second propellant strand is smaller than said first grain so as not to materially contribute to the gas production of the propellant as whole.

3,718,095

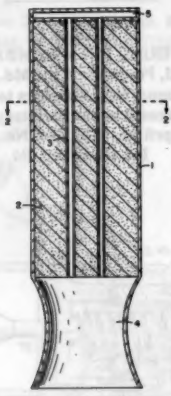
BURNOUT PERFORATION FOR ROCKET PROPELLANTS

John R. Munger, Huntsville, and Sherman E. Tate, Hartselle, Ala., assignors to the United States of America as represented by the Secretary of the Army

Filed Sept. 26, 1968, Ser. No. 763,030
Int. Cl. F02k *9/04*
U.S. Cl. 102—102 2 Claims

A means has been provided to utilize the previously open unused core space in the propellant grain of a rocket motor thus saving wasted space while providing additional thrust to the rocket. The core space is filled with propellant and filamentary means is located in the normal core space or a more rapid burning propellant is cast in the

normal core space. The filamentary means can consist of thin metal tubes, strands of very high burning rate propellant or small holes drilled or cast through the propellant in the normal core space.

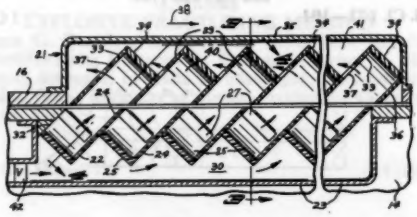


3,718,096

VORTEX THRUSTER FOR FLUID PROPELLED OBJECTS

Roger D. Bloomfield, Minneapolis, and Gary J. Wirth, both of St. Paul, Minn., assignors to Uniflo Systems Company, South Edina, Minn.

Filed Nov. 17, 1970, Ser. No. 90,257
Int. Cl. B61b *13/12*
U.S. Cl. 104—155 10 Claims



A thruster for fluid propelled objects such as levitated vehicles, or rotating machinery to increase the efficiency of relative thrust between the relatively moving parts. The primary device is a vehicle levitated through valves acting from a duct below the track. The vortex type thruster is designed to utilize substantially all of the energy stored in the fluid which is supplied under pressure through the thruster. The thruster is made in two sections, one forming a section of the stationary member, and a complementary section mounted on the moving member.

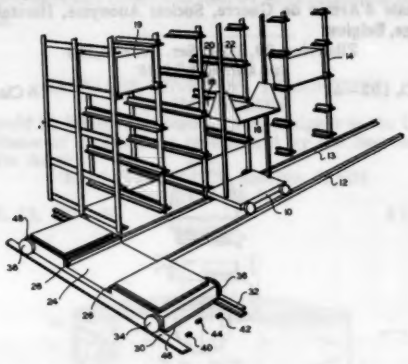
3,718,097

AUTOMATIC VEHICLE STOP MECHANISM

Howard C. La Tourneau, Augusta, and William E. Riedner, Battle Creek, Mich., assignors to Clark Equipment Company

Filed June 30, 1971, Ser. No. 158,432
Int. Cl. B61k *7/02*; B65g *1/06*
U.S. Cl. 104—249 11 Claims

This is a mechanism for automatically stopping a fixed path electric motor driven vehicle by first de-energizing the electric motor and then bringing the vehicle to a positive stop. Protruding stop members are placed in the path of the vehicle to actuate both the motor de-energizing switch and to engage the positive stop means.



3,718,098

ELASTIC POST BRACING ASSEMBLY

William Don Miller, 5505 E. Evergreen Blvd., Vancouver, Wash. 98661

Filed Aug. 28, 1970, Ser. No. 67,775
Int. Cl. B61d *45/00*; B60p *7/10*
U.S. Cl. 105—369 B 5 Claims

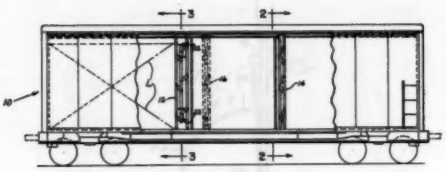
Bracing posts for railway boxcars engage adjacent, detached items of cargo, usually packaged, to prevent lateral displacement thereof. If a post engages one side of a rigid package of cargo and pins it against the side of the car, the package will tend to cant instead of slide longitudinally of a car under travel conditions inducing sway, acceleration and deceleration forces induced by motion. An elastic, tubular, vertical, non-circular post having substantial elasticity, fixed at its upper end, will twist about its longitudinal axis and will maintain face-to-face engagement with the cargo if it is journal-mounted at its lower end. This develops torque within the post to cam-lock the cargo against the side of a railway car, under bind or frictional engagement that will inhibit shifting even under the action of alternating opposed forces developed by such acceleration, deceleration, and sway of the car in motion. The grip developed by the twisted post maintains face-to-face engagement with the cargo, particularly if it is strapped cargo.

3,718,099

PRESSURE BULKHEAD FOR A RAILWAY CAR

Duane V. Thornton, and Jan D. Holt, both of St. Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Nov. 4, 1970, Ser. No. 86,804
Int. Cl. B60p 7/14
U.S. Cl. 105—369 BA 11 Claims



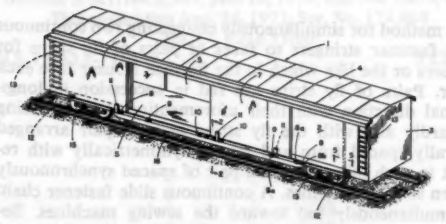
Lading restraining bulkheads for a railway boxcar are movable on overhead tracks and floor tracks along both sides of the car. Each bulkhead has a platen supported on a frame by air bellows. The frame and platen have spring pressed detents extending into perforations of the tracks. The detents are beveled on the lading side so that a sufficient force on the platen will cam the detents open and move the platen toward the lading. This action will occur when an impact on the car causes compaction of the lading.

3,718,100

RAILROAD BOX CAR AND DOOR POSITIONING AND STOP MEANS THEREFOR

Franklin P. Adler, Michigan City, Ind.; John D. Bailey, Chicago, and George F. Bridges, South Holland, both of Ill., assignors to Pullman Incorporated, Chicago, Ill.

Filed Jan. 7, 1971, Ser. No. 104,700
Int. Cl. B61d 19/00
U.S. Cl. 105—378 13 Claims



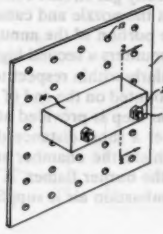
In a railroad box car having on each side a pair of outwardly and inwardly moving doors to open and close a central door opening, longitudinally spaced door positioning and door stop means in the form of bottom-of-door catch assemblies including a pair of longitudinally spaced catch units for holding the door in a closed position and a half-opened position and a fully opened position respectively and further stop means at each end of each side of the car inwardly of an end ladder to prevent movement of a respective door outwardly beyond the ladder to the fully opened position, each catch unit including a pivotally mounted vertical catch arm mounted on the door and engageable with stop blocks on the car side sill and the stop means including a horizontally extending stop arm normally urged outwardly in the path of the outwardly moving door by rotation of the stop arm down an inclined guide urging the stop arm in an outwardly extending position in the path of the door.

3,718,101

SHELF

Francis G. Sacks, Washington Court House, Sayette County, Ohio

Filed May 18, 1971, Ser. No. 144,519
Int. Cl. A47b 5/00
U.S. Cl. 108—152 2 Claims



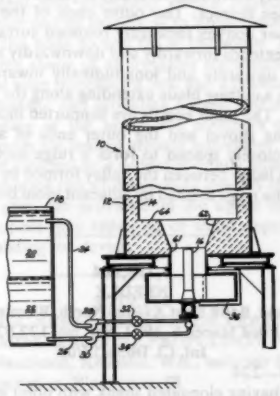
A display shelf comprises a hollow box of stiff board material having one side open. The shelf is mounted by assembly over a relatively rigid supporting block having upper and lower surfaces spaced to slidably and frictionally contact the interior surfaces of opposite horizontal sides of said shelf. The supporting block is fastened to an upright wall and the assembly of the hollow box-like shelf upon the supporting block produces a shelf structure which conceals its own support. In an embodiment particularly suited for attachment to perforated walls, bolt elements having an L-shaped shank have the foot portions of their shanks entered into perforations of the wall and the supporting block for the shelf is bored to receive threaded ends of the bolt elements. Appropriate nuts are engaged to the bolt elements to secure the supporting block to the perforated wall and then the box-like shelf is slidably assembled over the supporting block.

3,718,102

COMBUSTION APPARATUS

Klaus H. Hemsath, Sylvania, and Dale E. Wright, Perrysburg, both of Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Oct. 29, 1971, Ser. No. 193,865
Int. Cl. F23g 7/00
U.S. Cl. 110—7 R 13 Claims



A combustion apparatus for incinerating non-homogeneous pumpable liquid wastes. A watery waste fraction and an oily waste fraction are introduced into a reaction chamber as

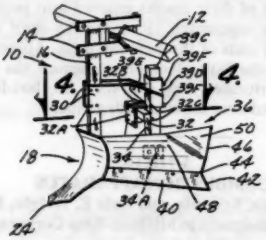
separate aerosol streams. Combustion air and auxiliary gaseous fuel are used as propellants to produce the aerosol streams. The liquid waste injector includes a central atomizing nozzle for the watery waste liquid fraction and a surrounding annular conduit for auxiliary fuel and combustion air. Around the outside of this first annular conduit is a second annular conduit having a concentrically mounted annular nozzle at the end thereof for producing an aerosol from the oily waste liquid fraction. A high velocity gas stream contacts the oily waste as it is discharged from the nozzle and causes it to flow in a thin sheet over a surface portion of the annular nozzle to an edge thereof where it encounters a second high velocity gas stream directed perpendicularly within respect to the surface. The injector is coaxially mounted on the end of a cylindrical reaction chamber. An annular step is provided at the entrance end of the reaction chamber a short distance downstream from the injector nozzle to shield the chamber surface by preventing wall attachment of the burner flames. A helically swirling annular column of combustion air is supplied around the injector.

3,718,103

SEEDED SPLITTER AND SHAPER

Henry K. Orthman, Lexington, Nebr., assignor to Orthman Manufacturing Inc., Lexington, Nebr.

Filed Jan. 6, 1971, Ser. No. 104,405
Int. Cl. A01b *13/02*
U.S. Cl. 172—159 **7 Claims**



A tool bar having a plurality of spaced apart ground working assemblies including a furrowing shovel with outwardly and rearwardly extending vertically adjustable mold boards on opposite sides thereof. The outer ends of the mold boards have an upper convex forwardly rounded surface and a rear edge which extends forwardly and downwardly and meets at a vertex with upwardly and longitudinally inwardly extending rear edge on a cutting blade extending along the bottom of the mold board. The mold boards are supported independently of the furrowing shovel and the outer ends of adjacent mold boards are closely spaced to form a ridge such that seed is planted on a ledge between the valley formed by the furrowing shovel and the ridge formed by adjacent mold boards.

3,718,104

NEEDLE

John L. Grund, 8408 First Avenue North, Birmingham, Ala.

Filed March 8, 1971, Ser. No. 122,024
Int. Cl. D05b *53/00*
U.S. Cl. 112—224 **6 Claims**

A needle having elongated shank with point at one end and eye opening between spaced wall portions of shank. One wall portion terminates short of one end of eye opening to define thread receiving passageway. Elongated guide having arcuate portion as viewed in cross section, adjacent one end secured at said one end to shank intermediate thread receiving passageway and point and extends across passageway with longitudinal edges of arcuate portion extending inwardly

along and adjacent opposite sides of passageway and adjacent wall portion with other end of guide extending alongside and in spaced relation to shank.

3,718,105

METHOD OF CONNECTING SLIDE FASTENERS TO FLY STRIPS FOR TROUSERS OR THE LIKE

Friedrich Glindmeyer, Ellendorf, Germany, assignor to William Prym-Werke KG, Stolberg, Rhineland, Germany

Filed Mar. 16, 1972, Ser. No. 235,300
Claims priority, application Germany, Mar. 26, 1971, P 21 81 522.6
Int. Cl. D05b *3/12*
U.S. Cl. 112—265 **4 Claims**

A method for simultaneously connecting two continuous slide fastener stringers to faces of pairs of fly strips for trousers or the like which in the finished trouser face each other. Pairs of fly strips are fed in succession in longitudinal direction with their aforementioned faces facing upwardly and with the fly strips in each pair arranged laterally spaced from and mirror symmetrically with respect to each other toward a pair of spaced synchronously driven sewing machines. A continuous slide fastener chain is simultaneously fed toward the sewing machines. Before the chain reaches the machines the two stringers of the chain are separated and one of the stringers is reversed through 180° relative to its longitudinal direction with respect to the other of the stringers before being brought in engagement with respective fly strip. The two stringers are then in the thus obtained positions sewn to the fly strips as fly strips and stringers pass through the two sewing machines.

3,718,106

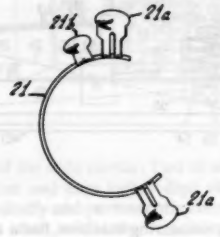
METHOD OF MAKING AN ELECTRIC SWITCH

Thomas R. Beaver, Paso Robles, Calif., assignor to CTS Corporation, Elkhart, Ind.

Division of Ser. No. 843,864, March 10, 1969, Pat. No. 3,571,535. This application Feb. 4, 1971, Ser. No. 112,633
Int. Cl. B21d *53/36*
U.S. Cl. 113—119 **3 Claims**

An electric switch having a plurality of individual spaced contacts and a common contact lying in the same plane and

supported by a stationary contact carrier of insulating material. Certain of the individual spaced contacts and at least a portion of the common contact have edge portions equally spaced from an elongated surface of the stationary contact carrier. Depending upon the switching requirements, the individual spaced contacts and the common contact can be provided with integral terminal means for connecting the contacts into an electrical circuit or some of the individual spaced contacts can be provided with integral stamped inductance means. A



movable contact carrier of insulating material is movable along the elongated surface of the stationary contact carrier and a bridging contactor constrained to move with the movable contact carrier selectively connects or shorts certain individual spaced contacts. The bridging contactor for the electric switch is blanked from sheet material with a plurality of contact portions and stored for future use. Depending upon the application of the switch, the extra contact portions are severed from the contactor which is then curved and ready for assembly to produce the electric switch.

3,718,107

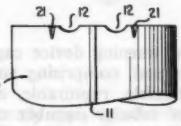
METHOD OF MAKING STRESS RELIEVED CONTAINERS

Herbert D. Bartels, Palos Heights, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 2,304, Jan. 12, 1970, Pat. No. 3,670,921. This application Aug. 24, 1971, Ser. No. 174,468

Int. Cl. B21d *51/00*

U.S. Cl. 113—116 W **3 Claims**



This disclosure relates to a metal container, and more particularly to a thin walled, metal can having a welded side seam and wherein at least one end thereof is necked-in and then outwardly flanged so as to receive an end of a reduced diameter. In order to prevent edge cracking during the flanging operation adjacent the welded seam, the necked-in edge of the can body is provided with a shallow notch on each side of the welded seam. In addition, in order to prevent wrinkling of the metal in alignment with the notches during the necking-in operation and subsequent fracture along the areas of wrinkling during flanging, the end edge portion of the blank from which the can body is formed is provided with stress relief indentations adjacent the notches.

3,718,108

GUIDE ARRANGEMENT

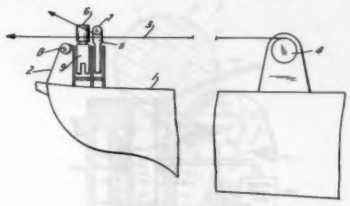
Hans Georg Janssen, Bremerhaven, Germany, assignor to Aktiengesellschaft "Weser", Bremen, Germany

Filed April 5, 1971, Ser. No. 131,169

Claims priority, application Germany, April 15, 1970, P 20 17 958.2

Int. Cl. B63b *21/14*

U.S. Cl. 114—181 **17 Claims**



The guide arrangement for marine hawsers comprises four rollers which are arranged pairwise so as to surround between them a guide passage for a hawser. The uppermost and, according to another concept, at least one of the upright rollers are mounted on pivotable arms so as to be pivotable with reference to the longitudinal axis of the guide passage, toward and away from this axis.

3,718,109

AQUATIC VEHICLE

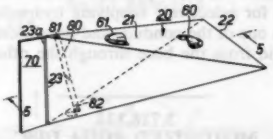
Michael D. Skitsko, 9650 76th St., Edmonton, Canada

Division of Ser. No. 837,011, June 27, 1969, Pat. No. 3,606,859. This application March 2, 1971, Ser. No. 120,319

Claims priority, application Canada, July 10, 1968, 024,755; Sept. 23, 1968, 030,661

Int. Cl. B63h *1/30*

U.S. Cl. 115—28 R **16 Claims**



An amusement and exercising device including a body buoyant in water and so shaped as to propel itself forwardly upon rocking the body to and fro in the water. The body is preferably in the shape of an irregular tetrahedron having a narrow vertical edge providing a bow and a horizontal narrow edge at the opposite end providing a stern and with sculling devices consisting of flat board-like members pivotally attached to the body for limited arcuate movement. Directional control may be effected by a rudder pivotally mounted on the body and/or pivoting one of the sculling devices about a vertical axis. Toe grips are provided on the upper surface upon which an occupant may either sit or stand depending upon skill in manipulating the device.

3,718,110

HYDRAULIC ARRANGEMENT FOR VERTICALLY TRIMMING A MARINE PROPULSION UNIT

Clarence E. Blanchard, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

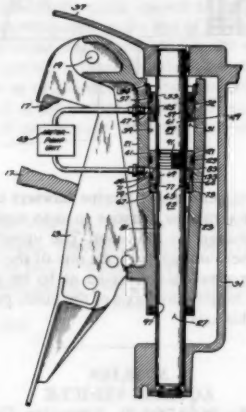
Filed Sept. 15, 1971, Ser. No. 180,788

Int. Cl. B63h *5/12*

U.S. Cl. 115—41 HT **9 Claims**

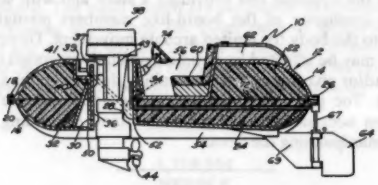
Disclosed herein is a marine propulsion device, such as an outboard motor, including a transom bracket adapted to be at-

tached to a boat transom, a swivel bracket pivotally connected to the transom bracket about a generally horizontal axis and having a vertically extending bore including a cylindrical portion, a propulsion unit including a housing supporting a propeller, a king pin having a length greater than the bore, and fixedly connected, at its upper and lower ends, to the housing and extending through the bore, a piston on the king pin in engagement with the cylindrical bore portion, means in the bore above the piston supporting the king pin for axial and rotative movement relative to the swivel bracket and for sealing an



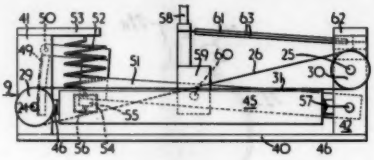
upper part of the bore against loss of hydraulic fluid, means in the bore below the piston for supporting the king pin for axial and rotative movement relative to the swivel bracket and for sealing a lower part of the bore against loss of hydraulic fluid, a pair of spaced hydraulic conduits extending through the swivel bracket and respectively communicating with the bore above and below the piston, and means communicating with the conduits for selectively supplying hydraulic fluid to the bore through one of the conduits and simultaneously draining hydraulic fluid from the bore through the other of the conduits.

3,718,111
MOTORIZED AQUA DISC
Michael Del Vecchio, 140 Regent Ave., Providence, R.I. 02908
Filed Apr. 5, 1971, Ser. No. 131,214
Int. Cl. B63b *35/00*
U.S. Cl. 115—70 **1 Claim**



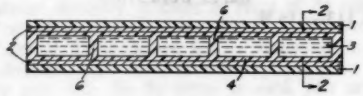
A self-propelled recreational device for use in water having a disc-like body portion with flotation material located therein, a vertically extending opening formed in said body portion, and a motor assembly mounted on said body portion and extending downwardly through said opening and terminating in a propeller that projects below said body portion.

3,718,112
MEASURING MACHINE
David Lester Edgar Perry, 80 Littlethorpe, Thorpe Bay, near Southend-on-Sea, England
Filed Nov. 2, 1970, Ser. No. 85,974
Claims priority, application Great Britain, Nov. 6, 1969, 54,374/69
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 **14 Claims**



An analogue measuring machine has a sensing mechanism which reacts against a resistance mechanism, measurement being indicated by an indication mechanism driven by the sensing means. The indication mechanism comprises a thin flexible band which extends between first and second pulley wheels and has its ends secured to the pulley wheels. The first pulley wheel is driven by the sensing means to move an index carried by the band relatively to a scale. A driving means is arranged so that the second pulley wheel is driven in unison with the first pulley wheel to maintain the length of the band between the first and second pulley wheels constant.

3,718,113
BURIED PIPELINE SIGNAL
Paul H. Schertler and Rupert F. Strobel, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed July 13, 1970, Ser. No. 54,104
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 R **7 Claims**

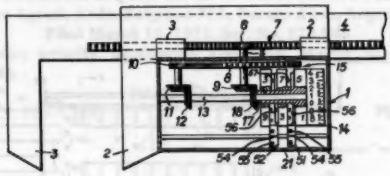


A buried visual warning device capable of producing a risable visible signal, comprising an underground corrosion-resistant, flexible, rupturable, essentially moisture and oxygen proof tubular member containing a visual signal producing means released into the air upon rupture of the tubular member. Also contemplated is the use of a plurality of the warning devices in spaced protective relationship about and parallel to a utility conduit.

3,718,114
LENGTH MEASURING INSTRUMENT
Artur Gneupel, 295 Frohburgstrasse, Zurich, Switzerland
Filed March 27, 1970, Ser. No. 23,352
Claims priority, application Switzerland, March 25, 1969, 4527/69
Int. Cl. G09f *9/00*
U.S. Cl. 116—129 **3 Claims**

A length measuring instrument, such as a slide caliper, a height tracer or sliding compass comprises a slide movable

along a slide carrier and provided with a counter mechanism for direct indication and read-out of the measured values. The counter mechanism comprises a plurality of rotatable figure drums or counters driven by a gear having a pinion mounted on the input shaft of the gear and meshing with a rack extending longitudinally of the slide carrier. Two of said counters indicating the smallest and next higher digit of the measured values are independently and permanently connected for rotation by said input shaft, while the remaining counters are driven by the intermediary of a stepping mechanism from said counter corresponding to the next higher digit.

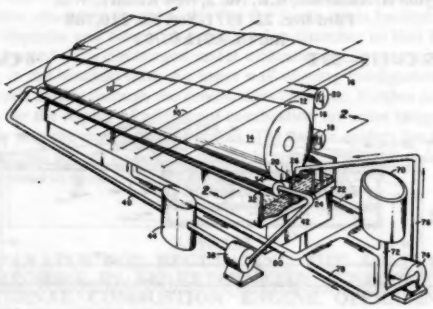


3,718,115

ADHESIVE APPLICATION SYSTEM

Charles A. Lee, Knoxville, Tenn., assignor to International Paper Company, New York, N.Y.

Filed Jan. 27, 1971, Ser. No. 110,018
Int. Cl. C23f 7/00
U.S. Cl. 118—203 **5 Claims**



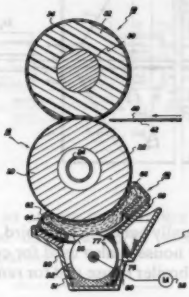
A system for uniformly applying adhesive to a base material comprising a plurality of spaced-apart filaments which are continuously moving forwardly in contact with an applicator roll disposed above a reservoir of liquid adhesive with a portion of the roll surface disposed beneath the surface of the adhesive so that the roll picks up a layer of adhesive on its surface as it is rotated and transfers adhesive to the base material, including a metering bar cooperating with the applicator roll to define a metering nip in which the thickness of the adhesive layer on the applicator roll surface is uniformly established, the metering bar being cooled sufficiently below ambient temperature to cause condensation of moisture on the bar and preclude build-up of solidified adhesive on the bar thereby preventing accumulation of adhesive such as would disrupt the uniformity of the adhesive layer established in the metering nip. The system also includes doctor blade means having a deformable doctoring surface for removing residuary adhesive from the roll surface in a region ahead of the region where the roll surface enters the liquid adhesive.

3,718,116

OIL DISPENSING APPARATUS

Raghulinga R. Thettu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed July 20, 1971, Ser. No. 164,369
Int. Cl. B05c 11/00
U.S. Cl. 118—266 **5 Claims**



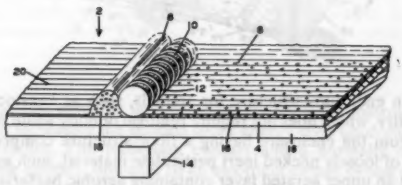
Apparatus for lubricating the heated fuser roll in a heated pressure xerographic fusing system. The apparatus includes an applicator roll for providing a film of oil to a wick assembly having a main wick contacting the fuser roll and an auxilliary wick with one end and main wick contacting the applicator roll and the other end the bottom of an oil pan supply to dispense sufficient oil when the applicator roll is inoperative.

3,718,117

GROOVED ROD COATER

Walter J. Lewicki, Jr., Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed April 26, 1971, Ser. No. 137,132
Int. Cl. B05c 3/18
U.S. Cl. 118—414 **3 Claims**



A coating apparatus is provided for placing a uniform coating of particulate-containing material. A grooved rod is held against the sheet to be coated by action of a magnet on the back side of the sheet to be coated. The grooves in the rod permit the controlled application of a coating containing particles.

3,718,118

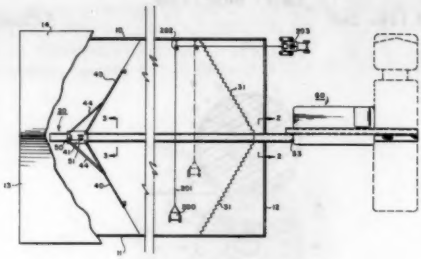
POULTRY HANDLING SYSTEM

David R. Bibler, Route 5, Russellville, Ark.

Filed Aug. 2, 1971, Ser. No. 167,951
Int. Cl. A01k 31/18, 31/04
U.S. Cl. 119—16 **14 Claims**

Disclosed is a system for collecting live broilers from a broiler house and depositing them in transport cages for removal to slaughter. The apparatus includes an endless belt conveyor disposed in a conduit in the floor of the broiler house exiting through a tunnel. A chaser fence crowds the

birds onto the conveyor which deposits them on an enclosed elevator conveyor outside the house. The elevator conveyor deposits the birds in waiting transport cages without ever



catching or individually handling each bird. The conduit in the floor of the broiler house is also used for conducting ventilating air through the broiler house and for removing litter.

3,718,119

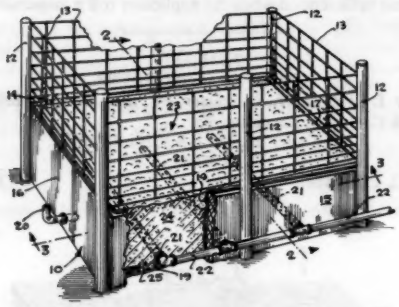
SELF-CLEANING ANIMAL ENCLOSURE STRUCTURE

Howard Jackson Stevenson, P.O. Box 33, Jacksonville, Ill.

Filed Nov. 26, 1971, Ser. No. 202,188

Int. Cl. A01j *1/00*

U.S. Cl. 119—28 **7 Claims**



An enclosure structure for animals, such as livestock and poultry, which does not require removal of body waste material from the enclosure having a floor structure comprising a bed of loosely packed inert particulate material, such as sand, with an upper aerated layer containing aerobic bacteria and a lower water-permeated layer containing anaerobic bacteria; wherein the aerobic bacteria initially act on the body waste material deposited on the floor of the enclosure to decompose the waste substantially into products which filter down into the lower layer of the bed where the anaerobic bacterial substantially decompose the products. Means are provided for controlling the depth of the water in the bed and for aerating the upper layer of the bed.

3,718,120

AUTOMATED KENNEL

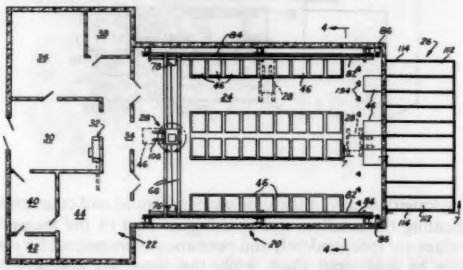
Karl W. Schwarz, Boonton; Allan S. Borkowski, and Joseph W. Hafesh, both of Fort Lee, all of N.J., assignors to Modern Animal Care, Inc., Fort Lee, N.J.

Filed Nov. 9, 1971, Ser. No. 197,098

Int. Cl. A01k *1/00*

U.S. Cl. 119—16 **14 Claims**

An automated kennel is provided which has a receiving area for animals, a storage area for animals and an exercising area. The storage area has a plurality of discrete locations for storing animals. A plurality of movable compartments is provided, each of which is provided to house an animal in the storage area. Transfer means are provided for moving the compartments to the receiving area to receive and remove the animal, to the storage area for storing the animal at one of the discrete locations and to the exercising area to enable an animal to run into the area. The exercising area has a movable wall for



gently returning the animal to the compartment after a predetermined period and control means are provided which are connected to the transport means for automatically transporting the animals to the various areas of the kennel. In addition monitoring means are provided throughout the system so that the animals can be watched and physiologically monitored simultaneously.

3,718,121

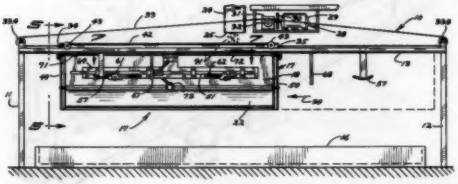
BUNK FEEDER FOR CATTLE

Layton H. Anderson, R.R. No. 2, New Auburn, Wis.

Filed Dec. 22, 1971, Ser. No. 210,788

Int. Cl. A01k *05/02*

U.S. Cl. 119—52 B **6 Claims**



Livestock feeding apparatus comprising frame means having generally horizontally disposed feeder supporting rails and defining a generally elongated feeding area of predetermined length beneath said rails. Feed carrier means mounted on the rails and arranged to move reciprocatorily above said feeding area between a pair of limit points at opposed ends of said supporting rails. The carrier means includes a feed retention bin having a length which is less than one-half the length of said feeding area and has a controllably openable bottom wall. Feed delivery means are provided having a discharge opening above the retention bin and arranged to deliver feed into the retention bin, and drive means are provided for reciprocatorily moving the retention bin between opposed positions at either end of the frame means. Locking means are provided coupled to the retention bin and adapted to open and close the bottom wall in response to motion of the retention bin along its reciprocatory path. The bin has latch tripping means adapted to open the bottom wall of the bin as the bin approaches the limit points of its reciprocatory travel, with means being provided to close the bottom wall as the bin continues movement toward the limit point. The bottom wall of

the bin has a pair of hinged segments, and hence the structure may be permitted to remain in open disposition when not in use.

3,718,122

FIRING CHAMBER FOR THE COMBUSTION OF GASEOUS, LIQUID OR FINE-GRANULAR FUEL

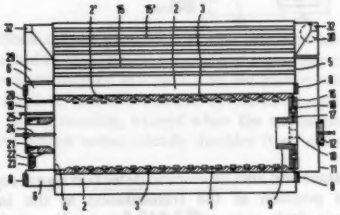
Jacobo Agrest, Avda. Belgrano 355, Buenos Aires, Argentina

Filed March 15, 1971, Ser. No. 123,948

Claims priority, application Argentina, March 30, 1970, 227746

Int. Cl. F22b *7/12*

U.S. Cl. 110—149 **7 Claims**



A combustion vessel structure for the combustion of fluid, i.e., gaseous, liquid or fine-granular fuel, preferably for steam generators, has its supply lines for fuel and for a partial amount of the combustion air located on one axial end side of a substantially cylindrical combustion chamber so that during operation a whirling or tornado flow is maintained in the combustion chamber. A gas outlet for the waste air is located at the opposite end side of the combustion chamber so that the combusted air is discharged under utilization of forces occurring in the tornado flow. An inner wall of wavy configuration extends axially through the combustion chamber. Further nozzles for the supply of additional combustion air enter tangentially into the troughs of the waves. The nozzle outlets for the additional air are disposed near the bottoms of the waves and terminate at most at the height of the wave crests.

3,718,123

APPARATUS FOR REGULATING THE AIR-FUEL MIXTURE IN AN EXTERNALLY IGNITED INTERNAL COMBUSTION ENGINE OPERATING ON INJECTED FUEL

Konrad Eckert, Stuttgart-Bad Cannstatt, Heinrich Knapp, Leonberg-Silberberg, and Gerhard Engel, Stuttgart, Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

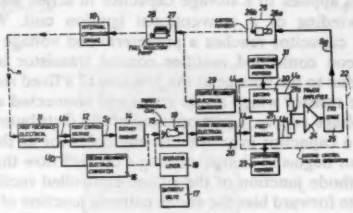
Filed Nov. 30, 1971, Ser. No. 203,345

Claims priority, application Germany, Dec. 3, 1970, P 20 59 473.4

Int. Cl. F02d *1/04, 1/06;* F02b *3/00*

U.S. Cl. 123—140 CC **13 Claims**

The fuel rack of a fuel injection pump is regulated as a function of the engine r.p.m., the position of the arbitrarily operated butterfly valve and other operational variables. For this purpose an electric signal representing a desired value is derived from the angular and axial positions of a three-dimensional cam (which assumes its position in response to an electric signal characterizing the actual engine r.p.m. and in response to a mechanical signal characterizing the actual position of the butterfly valve) and is compared with an electric signal representing an actual value derived from the actual position of the fuel rack. The electric signal resulting from said comparison is applied to a control member which is displaced accordingly and which, by virtue of its connection with the fuel rack, causes a corresponding movement of the latter. Electric correcting signals representing physical



magnitudes, such as engine temperature and atmospheric pressure, vary the desired and/or actual value signals prior to their comparison.

3,718,124

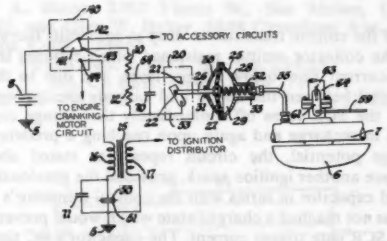
VACUUM ACTUATED IGNITION SPARK ENERGY LEVEL CONTROL CIRCUIT

Harvey A. Burley, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 4, 1971, Ser. No. 186,033

Int. Cl. F02p *3/02*

U.S. Cl. 123—148 DC **3 Claims**



A vacuum actuated ignition spark energy level control circuit for increasing the ignition spark energy level upon engine deceleration. The stationary contact and a normally open movable contact, operable to an electrical circuit closed condition, of an electrical switch are connected across at least a portion of the ballast resistance connected in series with the ignition coil primary winding while the engine is in the running mode. A pressure responsive electrical switch operating device, in communication with the intake manifold of the associated internal combustion engine, is operatively connected to the movable contact of the electrical switch for operating the movable contact to the electrical circuit closed condition upon engine deceleration to reduce the value of ballast resistance connected in series with the ignition coil primary winding.

3,718,125

CAPACITOR DISCHARGE IGNITION SYSTEM

Thad W. Posey, 2402 Apple Hill Rd., Alexandria, Va.

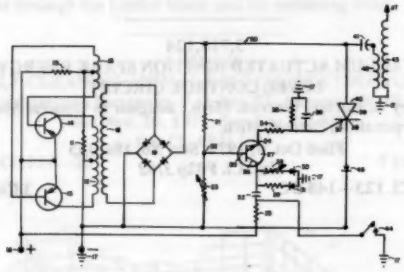
Filed April 5, 1971, Ser. No. 130,950

Int. Cl. F02p *3/06*

U.S. Cl. 123—148 E **3 Claims**

An improved capacitor discharge ignition system which produces controlled multiple ignition sparks for each opening

of the distributor breaker points. Upon applying a direct current potential across the input terminals of a conventional DC to DC inverter circuit, the inverter power transistors begin oscillating, thereby driving the primary of the inverter transformer which produces a high voltage potential in the secondary windings. A diode bridge circuit rectifies this potential which is applied to a storage capacitor in series with the primary winding of a conventional ignition coil. When the storage capacitor reaches a predetermined voltage potential the silicon controlled rectifier control transistor is forward biased due to the voltage at the junction of a fixed resistor and variable resistor which are in series and connected across the high voltage supply. Upon opening of the distributor breaker points, a capacitor in series with the collector of the control transistor begins to charge causing a current flow through the gate cathode junction of the silicon controlled rectifier sufficiently to forward bias the anode cathode junction of the SCR. The storage capacitor discharges through the SCR and primary of the ignition coil causing an ignition spark to be produced. This discharge of the storage capacitor causes the base potential of the control transistor to drop to zero volts thereby raising the collector emitter resistance which reduces the SCR gate current flow below trigger level, and due to the zero potential between the anode and cathode electrodes of the SCR. the SCR turns off. Immediately the storage capacitor starts to recharge and again upon reaching a predetermined voltage potential, the circuit repeats as stated above to produce another ignition spark, provided the previously mentioned capacitor in series with the control transistor's collector has not reached a charged state which would prevent sufficient SCR gate trigger current. The capacitor's RC time constant is controlled by a variable resistor which may be adjusted to produce from one to as many ignition sparks as desired, depending on the frequency of the ignition sparks as determined by the variable resistor associated with the base electrode of the control transistor and the duration of the opening of the breaker points. Upon closing of the breaker points, the control transistor's collector capacitor is discharged through the breaker points and a fixed resistor thereby resetting the circuit for the next ignition cycle.



3,718,126

IGNITION TIMING REGULATING DEVICE FOR INTERNAL COMBUSTION ENGINES

Kazuo Oishi; Tokuhiro Kurebayashi; Noriyoshi Ando; Naboru Yamamoto, all of Kariya; Tadahide Toda; Hidetaka Nohira, and Takashi Katoh, all of Shizuoka-ken, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyotashi and Nippondenso Kabushiki Kaisha, Aichi-ken, both of, Japan

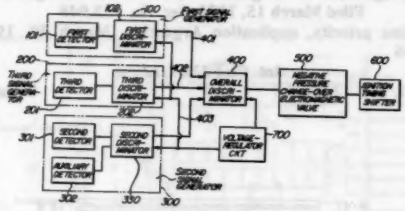
Filed July 14, 1970, Ser. No. 54,679

Claims priority, application Japan, July 21, 1969, 44/57566; Oct. 20, 1969, 44/83726

Int. Cl. F02p 5/04

U.S. Cl. 123—117 R **27 Claims**

An ignition timing regulating device for internal combustion engines comprising a logical operation circuit, which receives discriminating output signals produced by comparing individual electric detection signals representing corresponding variables selected from the engine speed, vehicle speed, engine load and engine temperature condition with respective preset values and also an electric detection signal representing the gear position of the transmission as the inputs, and generates a single output signal, and an ignition timing shifting means to shift the spark timing in accordance with the output signal from the afore-said logical operation circuit.



3,718,127

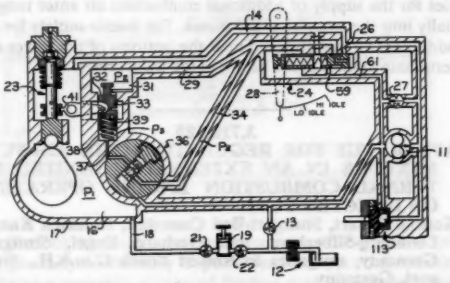
HYDRAULIC GOVERNOR

Marvin A. Gates, Chillicothe, and John H. Parks, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 18, 1970, Ser. No. 73,309

Int. Cl. F02d 1/04

U.S. Cl. 123—140 FG **12 Claims**

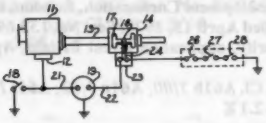


A hydraulic engine governor wherein a throttle control valve also serves to establish a stable reference pressure independent of the system pump pressure for insuring stable governor operation. Stable reference pressure as determined by the throttle setting of the valve and a control pressure regulated by the centrifugal force exerted on a modulating valve as a result of the engine speed respectively, actuate the opposite ends of a piston to vary its position in accordance with the pressure differential. The piston position in turn regulates the amount of fuel injected into the engine to thereby provide a speed governing action. Provision is made for sealed communication for reference and control pressure to and from the rotary centrifugal modulating valve. The throttle valve features a control lever mechanism having minimized exposed control parts and which yet serves to retain the valve in throttle positions set by the operator.

3,718,128
IGNITION INTERLOCK SYSTEM

Kurt Botker, Thurmont, Md., assignor to North American Philips Corporation, New York, N.Y.

Filed Aug. 20, 1971, Ser. No. 173,531
Int. Cl. F02n *11/08, 11/10*
U.S. Cl. 123—179 K 11 Claims

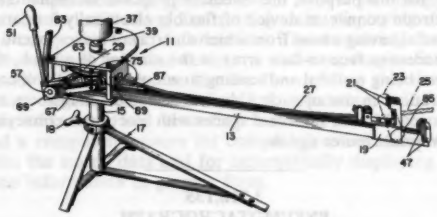


An interlock circuit grounded at one side and having one wire connected to the ignition magneto of a gasoline engine. A second wire is connected to a switch on the transmission to actuate the circuit to be a short circuit across the magneto when the engine is not running, except when the transmission is in neutral. The circuit automatically disables itself after the engine starts.

3,718,129
APPARATUS FOR STARTING ROPE-PULL ENGINES

Kenneth R. McKee, 13761 Gladstone St., Sylmar, Calif.

Filed Nov. 10, 1971, Ser. No. 197,215
Int. Cl. F02n *17/00, 3/02*
U.S. Cl. 123—179 P 15 Claims

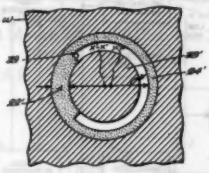


Apparatus for starting small, internal combustion, manually started engines. The apparatus comprises a base frame from which a track extends, ending in a brace which abuts the engine to be started, thereby preventing relative movement between the engine and the apparatus. A carriage having structure for gripping the engine starting handgrip is mounted on the track and may be moved away from the engine and toward a motor-driven pulley on the base frame by means of a cord, extending between the carriage and the pulley, and wound upon the pulley. The pulley may be connected to the drive motor through a normally open clutch. The clutch is actuated to the open position by means of a safety lever which must be actuated by the operator before the pulley will pull the carriage away from the motor to be started. As the carriage reaches a position adjacent the frame upon which the pulley is mounted, it actuates a cam adjacent the end of the track to force the clutch into the disengaged position against the action of the safety lever. The rewind spring of the engine's starter, acting through the starting rope, then causes the carriage to move back toward the engine and return to the initial position. There, the carriage actuates a push-bar at the opposite end of the track which pulls the cam away from the clutch-disengaged position, causing reengagement of the clutch for the commencement of another cycle of the operation, if the safety lever is still actuated.

3,718,130
FREE CORE GRINDING DRILL

Frederick Donald Wing, 145 Beacon Lane, Jupiter Inlet Colony, Jupiter, Fla.

Filed Dec. 28, 1970, Ser. No. 101,507
Int. Cl. B28d *1/14*
U.S. Cl. 125—20 4 Claims

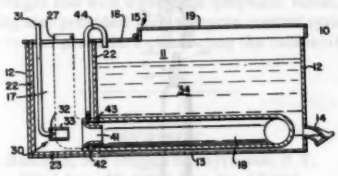


A core drill designed to insure a core will be generated sufficiently smaller in diameter than the normal inside diameter of the drill, and therefore a free or loose core, to assure easy removal or drop out of the core from the drill. This is accomplished by providing a drill of any predetermined outer diameter and an inner bore providing a smaller inner diameter having longitudinal walls parallel with but offset relative to the longitudinal walls of the outer diameter, therefore, in operation, the running inside diameter rotates eccentrically to the true running outside diameter on a common axis to generate a core having a smaller diameter than the inside diameter of the core drill.

3,718,131
VACUUM COLLAR FOR ROOFING KETTLES AND THE LIKE

Ewald A. Busse, 2302 Flores St., San Mateo, Calif. 94403, and Glen W. Raker, 2648 Graceland Ave., San Carlos, Calif. 94062

Filed Feb. 7, 1972, Ser. No. 224,155
Int. Cl. E01c *19/45;* F24h *1/00*
U.S. Cl. 126—343.5 A 10 Claims



Roofing kettles or the like, for heating masses of bituminous material, provided with means for reducing the smoke, fumes and vapors given off in operation are disclosed, which means comprise various embodiments of the invention. Embodiments of the invention suitable for retrofitting existing kettles, as well as the embodiment of the invention in kettles as originally built in various forms are described.

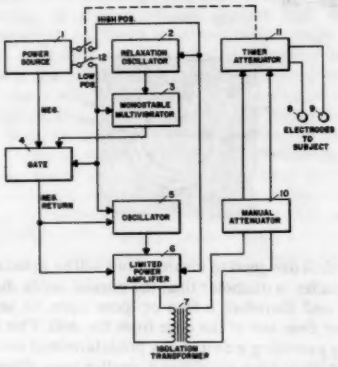
3,718,132
ELECTROTHERAPY MACHINE

William J. Holt, Garland, Tex., and Roger Boy de la Tour, Los Angeles, Calif., assignors to Neuro Systems Inc., Garland, Tex.

Continuation-in-part of Ser. No. 629,232, April 7, 1967, abandoned. This application March 26, 1970, Ser. No. 22,809
Int. Cl. A61n *1/00*
U.S. Cl. 128—1 C 7 Claims

A machine for inducing sleep and other therapy effects by means of repetitive electrical pulses wherein potential danger

to the treated subject is avoided by the generation of trains of rapid alternately positive and negative pulses whose vectorial sum is equal to zero, thus avoiding the application of net direct currents. Trains of pulses are applied to the subject through a



transformer to avoid shock hazard. A timer attenuator allows gradual rise in current over a fixed time period to a fixed level, maintenance of the fixed current level for a variable time period which may be set, and gradual decline in current over a fixed time period.

3,718,133

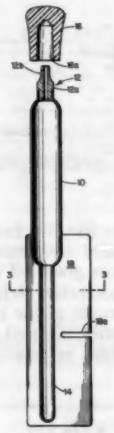
CONTAINER UNIT FOR LIQUID SAMPLES

Wesley G. Perry, Wayland, and James F. Marten, Cohasset, both of Mass., assignors to Damon Corporation, Needham Heights, Mass.

Filed Jan. 12, 1971, Ser. No. 105,930

Int. Cl. A61b *10/00*

U.S. Cl. 128—2 F **9 Claims**



This invention relates to a disposable container unit for liquid samples and is particularly useful for the collection of blood specimens. It includes an elongated compressible bulb member having an integral nozzle attached thereto. An elongated storage volume having a closed and an open end and a small cross sectional area is also provided, the open end being in communication with the bulb member. Preferably but not necessarily the longitudinal axis of the storage volume, the bulb and the nozzle are coaxial. If the container unit is held vertically upward, liquid in the bulb will not flow freely into the storage volume because of its small cross sectional area. Similarly, if the storage volume contains liquid and is turned upside down, the liquid will not flow from it into the bulb.

3,718,134

IMPLANTABLE ELECTRODE CONNECTOR DEVICE

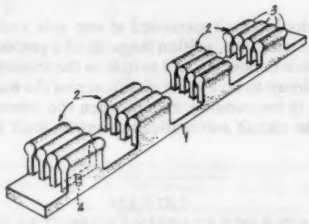
Giles Skey Brindley, London, England, assignor to National Research Development Corporation, London, England

Filed April 13, 1971, Ser. No. 133,692

Claims priority, application Great Britain, April 17, 1970, 18,482/70

Int. Cl. A61b *5/00*; A61n *1/02*; A61f *1/00*

U.S. Cl. 128—2.1 E **5 Claims**



This proposal concerns a prosthesis, for a paraplegic with severed spinal cord, which operates by picking up motor signals from the still active nervous system and transmitting the same to stimulate spinal roots in the otherwise inactive part of the system, thereby bridging the lession. More particularly for this purpose, the invention proposes an implantable electrode connector device of flexible electrically insulating material having a base from which an array of leaves extend in a successive face-to-face array in the manner of a book, the leaves being resilient and tending to adopt a closed book configuration. In use of such a device, selected spinal roots are connected in the inter-leaf spaces with electrodes conveying appropriate motor signals.

3,718,135

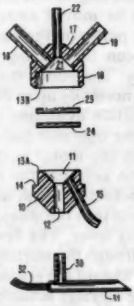
PNEUMOTACHOGRAPH

Louis Diamond, and William T. Lipscomb, both of Lexington, Ky., assignors to The University of Kentucky Research Foundation, Lexintgon, Ky.

Filed March 1, 1971, Ser. No. 122,599

Int. Cl. A61b *5/08*

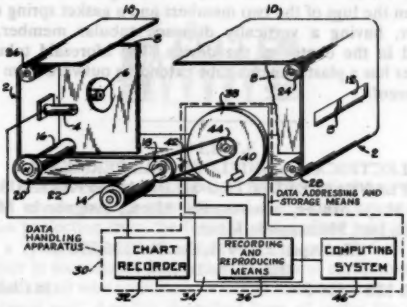
U.S. Cl. 128—2.08 **6 Claims**



A pneumotachograph suitable for measuring flow rates of respiratory gases in small animals and comprising essentially a

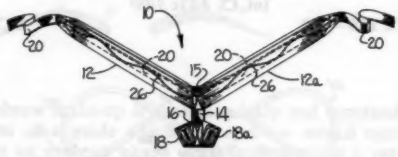
flow-resisting element which can be placed in series with a subject's airway. The pressure drop across the resistive element is proportional to the rate of airflow and is linear over the range of flows which one normally would expect to encounter in small animals (0–2 liters/min.).

3,718,136
REGIONAL LUNG MEASURING DEVICE
Alvin S. Blum, 700 Palermo Ave., Coral Gables, Fla. 33134
Filed Oct. 9, 1968, Ser. No. 766,066
Int. Cl. A61b 5/08
U.S. Cl. 128—2.08 7 Claims



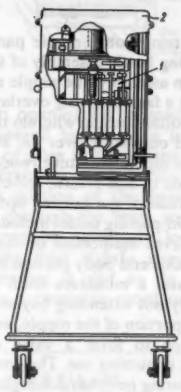
A regional lung measuring device for measuring volume, ventilation and perfusion, and a data handling apparatus for addressing and storing data, displaying data, and computing ratio information. The measuring device includes fixed radiation detectors, and a moving radiation shield with an aperture therein for defining the size of a lung region. The data handling apparatus includes a data addressing and recording means, a chart recorder, and a computing system for computing ratio information from the stored data and for automatically displaying the ratio information in graphic form.

3,718,137
CLAVICLE BRACE
John F. Gaylord, Jr., Matthews, N.C., assignor to Medical Specialties, Inc., Charlotte, N.C.
Filed Jan. 13, 1971, Ser. No. 106,155
Int. Cl. A61f 5/04
U.S. Cl. 128—87 R 4 Claims



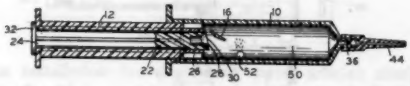
A clavicle brace for supporting the shoulder region of the body in a fixed position without biting into the body of the wearer. The brace comprises a back strap and a pair of upwardly extending shoulder straps connected at the upper end of the back strap. The shoulder straps include a contoured, non-biting, porous core of a resilient foam material which distributes the forces from the shoulder straps over a broad area of contact. Since the core is porous, ventilation to the surface of the skin beneath the straps is permitted.

3,718,138
RADIOACTIVE SOLUTIONS INJECTOR FOR LYMPHATIC SYSTEMS
Nickolai Nikolaevich Alexandrov, and Arkady Dmitrievich Strukov, both of Minsk, U.S.S.R., assignors to Nauchno-Issledovatelsky Institut Onkologii I Meditsinskoi Radiologii MZ BSSR, Minsk, U.S.S.R.
Filed March 24, 1970, Ser. No. 22,324
Int. Cl. A61m 05/00
U.S. Cl. 128—214 R 2 Claims



An apparatus for injecting radioactive solutions into the lymphatic system, comprising at least one syringe for discharging the contents thereof; a conduit for communicating the interior of the syringe with the patient's lymphatic vessel, a system of auxiliary syringes and multiway valves used to alternately communicate the interior of the first syringe with the auxiliary syringes and with a patient's lymphatic vessel; the apparatus being also provided with a remote control system controlling the rate of procedure of injecting the radioactive solutions.

3,718,139
SYRINGE
George W. Hanford, 304 Oneida St., Syracuse, N.Y.
Filed Aug. 21, 1970, Ser. No. 65,842
Int. Cl. A61m 1/00
U.S. Cl. 128—235 3 Claims



A medicament applicator of the syringe type having a plunger sleeve slidable in the syringe barrel, the inner end of which has an integral severable circular closure, and a plunger slidably mounted in the sleeve and recessed to contain a solid medicament, the recess having an oval cutting edge to shear the closure from the plunger sleeve upon initial inward movement of the plunger, to expose the solid medicament to a solution container in the syringe barrel, whereupon further inward movement of the sleeve and plunger, the mixture is ejected.

3,718,140
NURSING BOTTLE NIPPLE

Akira Yamauchi, Sasayama-cho, Taki-gun, Hyogo-prefecture, Japan

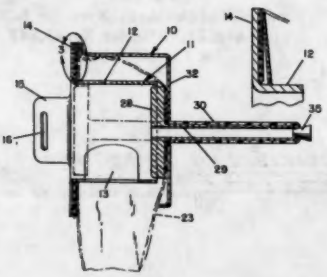
Division of Ser. No. 23,681, March 30, 1970, Pat. No. 3,651,973. This application Oct. 13, 1971, Ser. No. 188,841
Int. Cl. A61j 9/00
U.S. Cl. 128—252 4 Claims

An improved nursing bottle nipple particularly adaptable for use with a nursing bottle assembly of the collapsible milk bag type. In such an assembly, the nipple and milk bag full of milk are secured by a fastening ring overlaying the mouth end of a milk bag and bottle housing wherein the open mouth end of the bag is folded outwardly over the housing mouth. The improvement in the nipple structure resides in a novel fluid-passing outlet portion of non-return, self-closing character regardless of the attitude of the nursing bottle assembly. More particularly, the fluid-passing outlet includes a small generally hemispherically convex membrane of thinner material than the rest of the bulbous end body portion of the nipple, which membrane constitutes a miniature form of nipple recessed within and generally not extending beyond the outer surface of the bulbous end portion of the nipple, and is punctured in a Y-shape or X-shape to form a valve of the self-closing character when not in nursing use. The convex membrane has a thicker radially flaring peripheral margin connecting it with a substantially thickened portion of the bulbous end body portion of the nipple, which collectively contribute to both reenforce the non-return type outlet as well as to preclude inward collapse of the convex, nipple-like membrane even under increased negative pressure within the interior of a bottle assembly when in use therewith.

3,718,141
COLOSTOMY AID

Edward A. Goetz, 1736 Voorhees Ave., Manhattan Beach, Calif.

Filed Feb. 2, 1971, Ser. No. 111,873
Int. Cl. A61f 5/44
U.S. Cl. 128—283 2 Claims

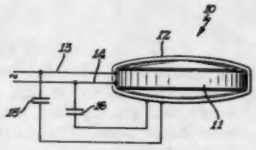


This invention consists of a stainless steel vertically disposed inner housing having a tubular member with a rectangular opening in the wall thereof. The aforesaid tubular member is provided with a flange with two opposed rectangular lugs on the bottom thereof that are contoured to the abdomen of a person. An outer housing having a second vertically disposed tubular member considerably larger in diameter than that of the first mentioned tubular member encompasses the first mentioned tubular member. The second mentioned tubular member has its wall cut away to expose the aforesaid rectangular opening in the wall of the first mentioned tubular member. The second mentioned tubular member has an integrally formed horizontally disposed top having a round opening in the center thereof and two opposed rectangular lugs integrally formed on the bottom of the aforesaid vertically disposed wall, the aforesaid lugs being of the same size and contour as that of the first mentioned lugs. The aforesaid lugs in both the lower and the upper rectangular members have matching rectangular openings therein for the reception of a metal snap fastener having an elastic belt that encompasses the body of the person on which this invention is placed. A clear rectangular plastic drain tube has one end encompassing the first mentioned tubular member and is held in place by the second mentioned tubular member. A gasket is located between the lugs of the two members and a gasket spring and plunger, having a vertically disposed tubular member, is located in the center of the device. The aforesaid tubular member has a plastic enema tube extending outward from the top thereof.

3,718,142
ELECTRICALLY SHIELDED, GAS-PERMEABLE IMPLANTABLE ELECTRO-MEDICAL APPARATUS

Pieter M. J. Muller, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed April 23, 1971, Ser. No. 136,890
Int. Cl. A61n 1/34
U.S. Cl. 128—419 P 10 Claims

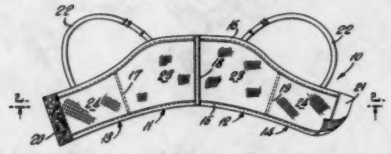


A thin film of metal, deposited on an implantable cardiac stimulator, acting as a shield to prevent interference with the electronic circuitry of the stimulator, the interference produced by any outside apparatus which might induce RF interference on electrodes from the stimulator to the heart, or through the living tissue to the stimulator body itself. Also, before implantation, because of a variety of very well-known reasons, a static charge that may have been built up on the stimulator is avoided because of the deposited shielding.

3,718,143
BREAST SUPPORT

Anthony M. Pagano, 6 Gates Avenue, Ossining, N.Y., and Dolores E. Fiedler, 47 East 67th Street, New York, N.Y.

Filed March 11, 1971, Ser. No. 123,224
Int. Cl. A41c 3/00
U.S. Cl. 128—499 8 Claims



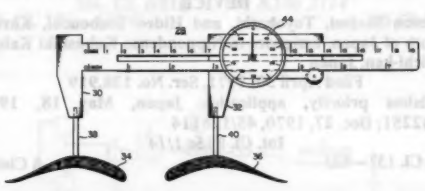
A breast support useful among other things to minimize postpartum breast engorgement with its resulting discomfort which includes a body encircling structure completely overlying and conforming to the entire anatomy of the breasts and formed of an elastic material for applying substantially

uniform pressure to the breasts to minimize venous and glandular engorgement.

3,718,144
HAIR CURLERS
Murray Jennis, Laurelton, N.Y., assignor to H. Goodman & Co., Kearny, N.J.
Filed June 10, 1971, Ser. No. 151,704
Int. Cl. A45d *2/02*
U.S. Cl. 132—39 **11 Claims**

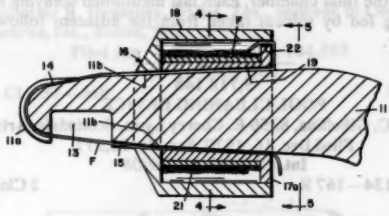
Hair curlers commonly have a hollow cylindrical form around which the hair is rolled, and many hair curlers have bristles projecting from the form. The described hair curlers have a cylindrical wall of undulating wire convolutions knit together in succession. One described form of curler involves additional knit wire convolutions folded inside each end of the cylindrical wall. Another described form of curler has each end of the knit cylindrical wall embedded in an annulus. The ends of the knit wire are guarded against exposure in both forms. The described rollers are supple in that they can readily assume what may loosely be called a banana shape, they are well ventilated, they can be made boilable for sterilization, and they can be penetrated by pins or used with clips and other fasteners for holding hair wound on the curler.

3,718,145
EYEBROW STENCILLING METHOD AND APPARATUS
Frederick D. Chateau, P.O. Box 31441, Los Angeles, Calif. 90031
Filed Feb. 23, 1971, Ser. No. 118,122
Int. Cl. A45d *24/06*
U.S. Cl. 132—88.5 **7 Claims**



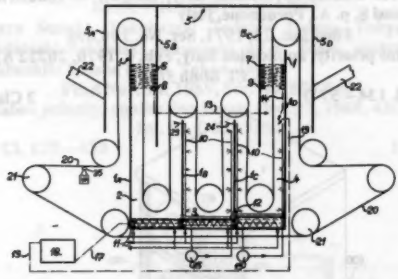
Eyebrow make-up is applied quickly and accurately by the use of a guide which has eyebrow stencil openings having an eyebrow shape which complements a person's facial configuration. Eyebrow templates are initially selected to provide proper configuration and coloring to complement the customer's features, coloring and personality. These templates are mounted on calipers for adjustable separation, are then held over the eyebrows, and the distance between the eyebrow templates is determined from the calipers. An eyebrow stencil having attached temples is selected, with the proper separation and eyebrow style to match the selected templates and the eyebrow spacing distance previously determined.

3,718,146
DENTAL FLOSS HOLDER
Robert E. Myers, 18506 Prince William Lane, Houston, Tex. 77058
Filed Mar. 8, 1972, Ser. No. 232,707
Int. Cl. A61c *15/00*
U.S. Cl. 132—92 **7 Claims**



A casing with an open-ended tapered bore is slidable on an elongated tapered handle to a locked or wedged position. A supply of floss in the casing extends through the bore in one direction, then across an open recess in the tapered end portion of the handle, and then in the other direction through the bore, so that portions of floss in the bore may be wedgingly locked against the handle to retain the floss tightly stretched across the recess, when the casing is slid to its locked position. The casing contains a rotatable spool on which the floss supply is carried.

3,718,147
INSTALLATION FOR DEGREASING METAL ARTICLES
Rene V. Laroche, Fribourg, Switzerland, assignor to Aluminium Suisse SA, Chippis, Switzerland
Filed Feb. 16, 1971, Ser. No. 115,810
Claims priority, application Switzerland, Feb. 17, 1970, 2221/70; Feb. 2, 1971, 1476/71
Int. Cl. B08b *3/02*
U.S. Cl. 134—60 **1 Claim**



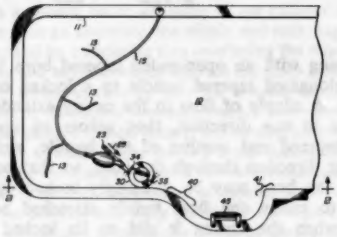
An installation for degreasing metal articles comprises means for driving articles to be cleaned successively through at least two chambers comprising heating means in their lower parts, the first chamber being a condensation chamber, and the other chamber(s) each comprising means for spraying a solvent. Condensers are located at the inlet to the first chamber and the outlet to the last chamber. Means for regenerating and recycling solvent comprise three circuits:a first circuit for each spraying chamber comprising means for pumping solvent from the bottom of the chamber to feed the spraying means ; a second circuit formed by overflows between adjacent chambers to enable a flow of solvent from the final chamber to the first chamber, and a first return conduit connecting the first chamber and the final chamber, said

first return conduit comprising a distiller comprising level compensating means by the external supply of solvent and being adapted to deliver distilled solvent to the final chamber; and a third circuit comprising means for recuperating condensation from the condensers and second return conduits for the delivery of condensation from the recuperation means to the final chamber ; the second circuit having a by-pass formed by at least one spraying nozzle at the outlet of each chamber except for the final chamber, each last mentioned spraying nozzle being fed by solvent taken from the adjacent following chamber.

3,718,148
POOL CLEANING DEVICE

Michael C. Gibellina, 8350 E. Cherry Lynn, Scottsdale, Ariz.

Filed Dec. 16, 1970, Ser. No. 98,577
Int. Cl. B08b *3/02, 9/08*
U.S. Cl. 134—167 R **2 Claims**

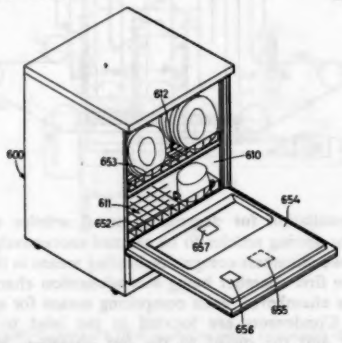


A rotating platform is provided with water jets directing water therefrom so as to have a horizontal component of velocity tangential to the platform resulting in the rotation of the platform. An inflexible supply conduit is connected at one end thereof to the platform and is provided with a water jet at its opposite end to urge the platform into contact with the pool side while simultaneously providing water to the jets mounted on the platform. A flexible conduit is connected to the pool pump and to the inflexible conduit to supply the latter with water under pressure for operation.

3,718,149
DISH-WASHER

Lamberto Mazza, Pordenone, Italy, assignor to Industrie A. Zanussi S. p. A., Pordenone, Italy

Filed Jan. 22, 1971, Ser. No. 108,898
Claims priority, application Italy, Feb. 4, 1970, 20222 A/70
Int. Cl. B08b *3/02*
U.S. Cl. 134—57 D **2 Claims**

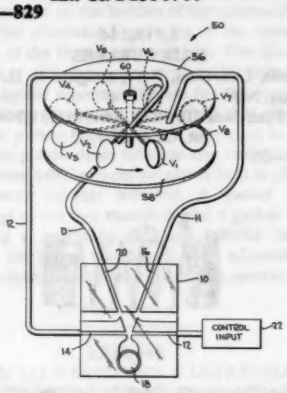


In a dish-washing machine of the type having two separate washing zones in which delicate tableware and cooking utensils are respectively charged, there being two detergent dispensers, the second of which is capable of supplying detergent only to the cooking utensil washing zone and is operated as a result of the rise of the washing temperature in the zone for the cooking utensils.

3,718,150
FLUID STEPPING MOTOR

Raymond W. Warren, McLean, Va., assignor to the United States of America as represented by the Secretary of the Army

Filed June 30, 1971, Ser. No. 158,322
Int. Cl. F15c *3/00*
U.S. Cl. 137—829 **4 Claims**

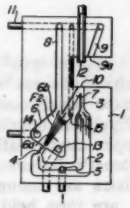


A fluid stepping motor for providing a rotary mechanical output for a fluidic digital logic system. A rotor having a plurality of vanes radially disposed a pivotable shaft is driven in a stepping fashion by fluid impulses issuing from a drive conduit connected to an output channel of a bistable fluid amplifier. After impinging upon one of said plurality of vanes, the fluid stream issuing from the drive conduit enters a receiver conduit that is connected to a control channel of the fluid amplifier causing it to switch its output to a hold conduit. The hold conduit is positioned in the rotor so as to establish an equilibrium position for an advancing vane. The vane is held in that position until a signal is applied to the other control channel of the bistable amplifier, whereupon the foregoing process is repeated. Each time a pulse is applied to the control input of the system, the rotor will advance one step and provide an output indication at the central shaft. The control input may be provided by any conventional pulsed device.

3,718,151
GAS CONTROLLED LIQUID PROPORTIONING FLUIDIC DEVICE

Kazuma Matsui, Toyohashi, and Hideo Tsubouchi, Kariya, both of Japan, assignors to Nippondenso Kabushiki Kaisha, Aichi-ken, Japan

Filed April 30, 1971, Ser. No. 138,919
Claims priority, application Japan, May 18, 1970, 45/42251; Dec. 27, 1970, 45/126114
Int. Cl. F15c *1/14*
U.S. Cl. 137—823 **6 Claims**



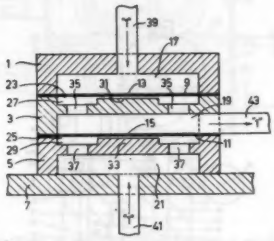
Injection nozzle means comprising means for forming a first liquid flow and a second liquid flow which are directed so as to join with each other, said second liquid flow being passed through a deflecting chamber, means for introducing a pulse

signal of compressed gas into the deflecting chamber whereby the second liquid flow is deflected into and out of confluence with the first liquid flow in accordance with the pulse signal.

3,718,152
FLUID LOGIC ELEMENT

Hillebrand J. J. Kraakman, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 5, 1971, Ser. No. 104,031
Claims priority, application Netherlands, Feb. 19, 1970, 7002383
Int. Cl. G05d *11/00*; G06d *1/00*
U.S. Cl. 137—114 **4 Claims**

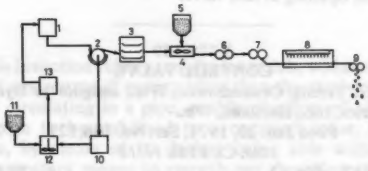


A fluid responsive logic element comprising two inputs and an output. The communications between each of the inputs and the output includes a check valve co-operating with a stop. The check valves when viewed from the output have opposite senses of operation. When in the neutral positions of the two check valves the communication between the associated input and output is open.

3,718,153
PROCESS FOR PREPARING SHEET-LIKE MATERIAL FOR SMOKING

Masao Kobari, Tokyo, Hiroshi Hagiwara, Yokohama, and Kensuke Uchiyama, Tokyo, Japan, assignors to The Japan Monopoly Corporation, Tokyo, Japan

Filed Sept. 15, 1971, Ser. No. 180,652
Claims priority, application Japan, Sept. 28, 1970, 45/84,103; Nov. 4, 1970, 45/96,454
Int. Cl. A01g *31/00*; A24b *3/14*
U.S. Cl. 131—140 C **10 Claims**

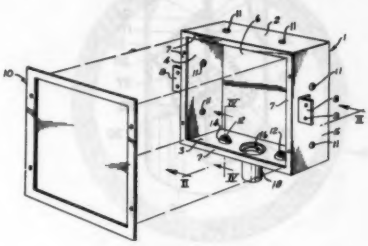


A process is disclosed for preparing sheet-like material for smoking which includes the steps of: culturing a fragment of a plant body of genus Nicotiana in a liquid medium under aerobic conditions to derive tobacco cells suspended in the liquid, isolating said tobacco cells from the cultured liquid, drying slightly the fresh tobacco cells at a temperature below 80° C. or mixing the fibrous materials and/or inorganic materials, so as to reduce the moisture content of the tobacco cells or the mixture thereof to 30–60%, forming the resulting moist powder into a sheet-like material and drying the same. The product has excellent physical properties and the cigarettes made therefrom have light and good organoleptic properties.

3,718,154
WASHING MACHINE OUTLET BOX

Constantine R. Doumany, Dallas, Tex., assignor to Conrad Industries, Inc., Dallas, Tex.

Filed Jan. 7, 1971, Ser. No. 104,593
Int. Cl. E03c *1/00*
U.S. Cl. 137—360 **2 Claims**

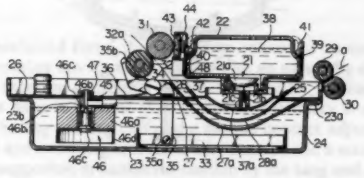


A washing machine outlet box having a waterproof trough formed in the bottom thereof to prevent leakage. The bottom of the box has a downwardly extending neck around a drain opening formed therein and upwardly extending surfaces around openings through which pipes extend. The neck around the drain opening extends downwardly into a drain pipe and the neck and the pipe are dented to lock them together.

3,718,155
DEVELOPER LIQUID SUPPLYING METHOD AND DEVICE FOR LIQUID DEVELOPMENT ELECTROPHOTOGRAPHY

Shigeru Suzuki, Yokohama; Tadaaki Kanno, Tokyo, and Tadatoshi Sakamaki, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Nov. 14, 1969, Ser. No. 876,846
Claims priority, application Japan, Dec. 27, 1968, 43/370
Int. Cl. G03d *3/00*
U.S. Cl. 137—433 **1 Claim**



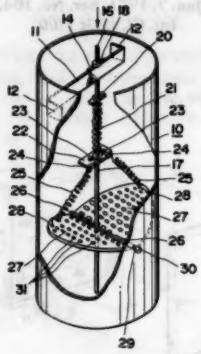
A developer liquid supplying method and a device therefor wherein a developer liquid prepared in advance at a certain concentration level required to keep the concentration of the developer liquid in the developer liquid tank at a fixed level is supplied automatically only when the developer liquid in the developer liquid tank decreases and otherwise the developer liquid for supply is intercepted from the developer liquid in the developer liquid tank.

3,718,156

AUTOMATIC AIR FLOW SMOOTHING APPARATUS

Akira Fujii, 8-24, Matsuzono-cho, Nishinomiya, Japan

Filed Jan. 27, 1971, Ser. No. 110,064
Int. Cl. F16k *17/06, 17/08*
U.S. Cl. 137—512.1 6 Claims



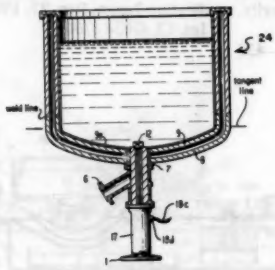
The present invention relates in general to an automatic air flow smoothing apparatus assuring a constant output air flow and more particularly to an automatic air flow smoothing apparatus, assuring a constant output air flow achieved by a suitable built-in automatic flow regulating means, despite an eventual change in the pressure of the input air flow.

3,718,157

RAM-VALVE LEVEL INDICATOR

Frank H. Siebentritt, Lebanon, N.J., and Esteban Silvera, Bronx, N.Y., assignors to North Branch Industries, Inc., North Branch, and William T. Hough, Basking Ridge, N.J., fractional part interest to each

Filed June 1, 1971, Ser. No. 148,338
Int. Cl. F16k *37/00*
U.S. Cl. 137—551 18 Claims



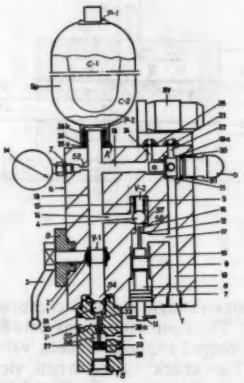
In a preferred embodiment, a ram-valve having a conduit extending about centrally along its longitudinal axis, with a liquid level indicator for measuring the vessel contents, with the level indicator mounted on top of the distal end of the ram-valve, making possible the measurement of the contents at levels well below the weld and tangent lines of the vessel above which most prior art level indicators are located, thereby avoiding prior art vessel weak points coincident with insertion of an indicator through the glass-lined double-walled vessel.

3,718,158

ACCUMULATOR CONTROL SYSTEM

Otmar Schon, Scheidterberg, Germany, assignor to Greer Hydraulics Inc., Los Angeles, Calif.

Filed Oct. 13, 1971, Ser. No. 188,794
Claims priority, application Germany, Oct. 28, 1970, P 20 52 892.1
Int. Cl. F16l *55/04*
U.S. Cl. 137—593 6 Claims



A pressure accumulator control system comprising a mounting block having a port to which the liquid port of the accumulator which is desirably mounted on the block may be connected, a pressure port and a discharge port, said block having a passageway connecting the first port to the pressure port with a manually operable shutoff valve in said passageway, a second passageway in communication with said first port, an automatically operable valve mounted on said block controlling communication between said first port and said discharge port, a pressure relief valve also mounted in said discharge passageway and a manually operated relief valve controlling flow between a relief passageway connecting said first passageway and the discharge passageway, said pressure port having an associated one-way valve with means to control the opening of said valve.

3,718,159

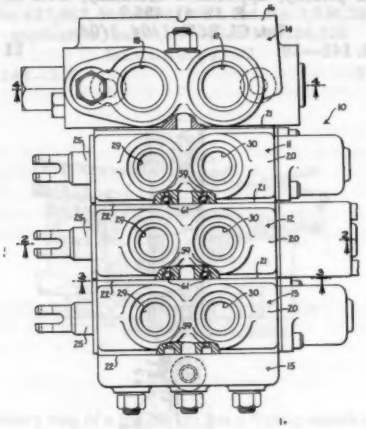
CONTROL VALVE

Francis H. Tennis, Oconomowoc, Wis., assignor to Hydraulic Industries, Inc., Hartland, Wis.

Filed Jan. 20, 1971, Ser. No. 108,127
Int. Cl. F16k *11/10*
U.S. Cl. 137—596.12 27 Claims

A control valve comprising a valve element shiftable to each of a pair of working positions to selectively communicate a service passage with either pressure fluid supply or return passages, and having means providing for control of the rate of fluid flow through the service passage. The rate of flow through a selected service passage of a sectional valve of this invention is controlled by a pressure compensating valve mechanism in the inlet section having a plunger which tends to move to a bypass open position under the influence of fluid pressure at the control valve inlet, and which tends to be moved in the bypass closing direction under the influence of fluid pressure at the service passage. A control passage

through which service passage pressure is imposed upon the compensating plunger includes transfer grooves in the face of



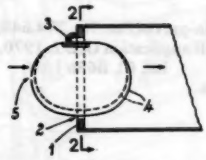
one housing section at the junction between each control section and an adjoining housing section.

3,718,160

DEVICE FOR CONTROLLING AIR FLOW IN VENTILATION PIPES

Pierre Charles Jules Jardinier, Gournay-sur-Marne, and Jack Paul Robert Simonnot, Lesigny, France, assignors to Societe d'Etudes et de Recherches de Ventilation et d'Aeraulique, Villiers-sur-Marne, France

Filed Apr. 1, 1971, Ser. No. 130,325
Int. Cl. F15d *1/02*
U.S. Cl. 138—46 **7 Claims**



This invention relates to a device which, without making use of any source of energy other than the motive pressure of air circulating in a pipe, enables the flow of air in this said pipe to be stabilised to a constant value; the said device, by virtue of its design, being able without any supplementary means to smooth out the effect of violent fluctuations of pressure, at the same time retaining good response sensitivity to progressive changes of pressure of low amplitude, said device having

at least one chamber of which part of, or the whole of the walls can undergo elastic deformation,

a seating associated with this chamber in such a way as to provide an air passage between this seating and the outside walls of the chamber,

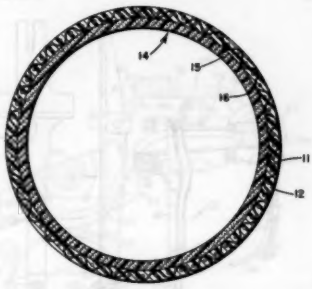
means which, when such a device is fitted in a pipe in which is maintained a motive pressure capable of assuring air circulation, enable a pressure equal to that upstream of the device to be present inside the chamber.

3,718,161

CRACK-RESISTANT PIPE

Charles S. Woodson, Parkersburg, W. Va., assignor to The Youngstown Sheet and Tube Company, Youngstown, Ohio

Continuation of Ser. No. 815,196, April 10, 1969. This application June 23, 1971, Ser. No. 156,036
Int. Cl. F16l *9/14*
U.S. Cl. 138—153 **2 Claims**



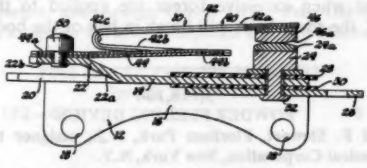
This patent discloses a plastic pipe and method of making same, having an outer shell of reinforced thermo-setting resin and an inner shell of thermo-setting and thermo-plastic resins.

3,718,162

CIRCUIT BREAKER

Gene L. Dafler, New Lebanon, and Lorand W. Magyar, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

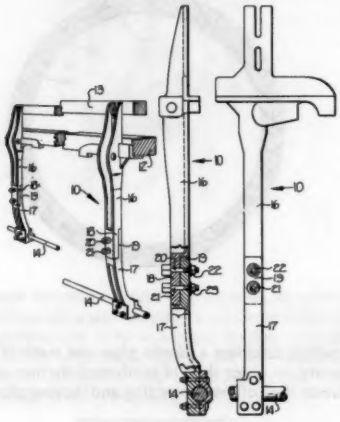
Filed Nov. 5, 1971, Ser. No. 196,010
Int. Cl. H01h *61/08*
U.S. Cl. 337—94 **3 Claims**



In a preferred form, this disclosure relates to an overload circuit breaker having a metal base with an upwardly extending tang thereon, a stationary contact carried by, but insulated from the base, a bimetal strip including a primary U-shaped portion having one leg carrying a mobile contact adjacent its free end and overlying said stationary contact and a secondary portion supported in cantilever fashion by the tang and having its free end connected with the other leg of the U-shaped primary portion. The bimetal strip is normally self-biased toward a first position in which the mobile contact engages the stationary contact to provide a conductive path therethrough, but is movable toward a second position in which the mobile contact is disengaged from the stationary contact when a current in excess of a predetermined magnitude is passed therethrough for a predetermined interval of time. The tang on the base is bendable to adjust the spring pressure of the bimetal strip so that the predetermined time interval prior to

opening of the contacts when an overload of current is passed therethrough can be readily calibrated.

3,718,163
TWO-PIECE TEXTILE LOOM SWORD
Odie Edward Walker, Jr., Lancaster, S.C., assignor to Springs Mills, Inc., Fort Mills, S.C.
Filed Aug. 12, 1971, Ser. No. 171,277
Int. Cl. D03d *49/60*
U.S. Cl. 139—188 2 Claims

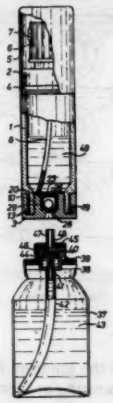


A textile loom sword for use in a textile loom to support the loom lay and characterized by ease in replacement in the event of breakage. The sword comprises an elongate body of a predetermined configuration formed from two members having mating opposite ends for assembly of the two members into a unitary body, and shear bolts passing through the mating ends of the body members for securing the members together to form a unitary body. The shear bolts are more easily breakable than the body members so that when excessive forces are applied to the loom sword, the shear bolts will break in lieu of the body members.

3,718,164
POWDER FEEDING DEVICE
Donald F. Stewart, Florham Park, N.J., assignor to Allied Chemical Corporation, New York, N.Y.
Continuation of Ser. No. 880,030, Nov. 26, 1969, abandoned. This application Nov. 17, 1971, Ser. No. 199,757
Int. Cl. B65b *1/04*, *3/04*
U.S. Cl. 141—1 7 Claims

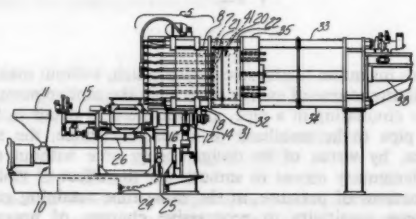
A device for feeding a measured volume of powder into a receiver without alteration of the bulk density and suited to high production rate.

3,718,165
REFILLABLE AEROSOL DISPENSER
Gisela Grothoff, 7 Nollenlinde, 466 Gelsenkirchen-Buer, Germany
Filed Dec. 8, 1970, Ser. No. 97,474
Claims priority, application Germany, Dec. 8, 1969, P 19 61 486.9
Int. Cl. B65b *1/04*, *3/04*
U.S. Cl. 141—20 11 Claims



A refillable aerosol dispenser comprises a container for a mixture of liquid and a gaseous propellant for dispensing the same. The container has an upper wall and a bottom wall. A dispensing valve is provided in the upper wall for dispensing the mixture when operated, and a separate inlet valve is provided in the bottom wall and operates independently of the dispensing valve for admitting gaseous propellant into the container.

3,718,166
MANIFOLD AND ADJUSTABLE NOZZLE ASSEMBLY FOR MOLDING MACHINES
John Gordon, Cranford, N.J., assignor to Midland-Ross Corporation
Continuation-in-part of Ser. No. 774,648, Nov. 12, 1968, abandoned. This application Oct. 2, 1970, Ser. No. 77,620
Int. Cl. B65b *1/04*
U.S. Cl. 141—236 17 Claims



A manifold and nozzle assembly within injection-molding equipment comprising, e.g., an extruder, an accumulator, a manifold, and a plurality of nozzles wherein the nozzles are universally pivotable with respect to the manifold. This invention is especially directed to sleeve structure by which the nozzles are attached to and pivotally supported by the manifold, and to nozzles of the type comprising a shutoff valve.

3,718,167

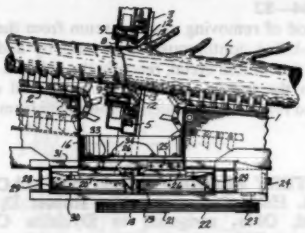
LIMB STUB-CUTTING MECHANISM

Peter J. Cervenak, Seattle, Wash., assignor to Nicholson Manufacturing Company, Seattle, Wash.

Division of Ser. No. 84,056, Oct. 26, 1970, which is a division of Ser. No. 627,067, March 30, 1967, Pat. No. 3,536,265. This application Jan. 24, 1972, Ser. No. 220,328

Int. Cl. A01g 23/02

U.S. Cl. 144—2 Z 3 Claims



The rotary ring of a log barker has a flaring mouth carrying bits in radial planes for cutting limb stubs. Hooked ends of swinging arms rotate around a log as it is moved lengthwise to scrape off the bark.

3,718,168

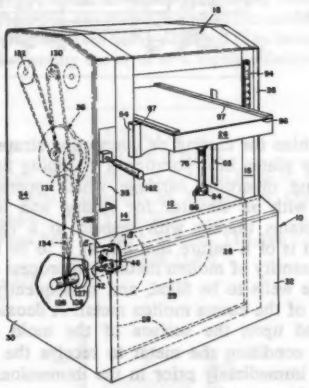
PLANER

Emerson R. Berends, Tupelo, Miss., assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.

Filed Jan. 22, 1970, Ser. No. 4,815

Int. Cl. B27c 1/02

U.S. Cl. 144—117 R 25 Claims



A planing machine in which the workpiece supporting table is provided with an uninterrupted low friction, abrasion resistant surface over which a workpiece is smoothly advanced through the region of the cutters. The drive system for the machine includes a single motor from which the cutter head is directly driven and the infeed and outfeed rollers are driven through an intermediate variable speed drive assembly enabling an operator to vary the speed at which a workpiece is fed through the cutting regions. The motor and drive components are housed within closure panels which are retained on the machine frame by fastener assemblies that permit the panels to be quickly and easily removed from the frame. A cutter guard and chip breaker assembly is pivotally supported at the outfeed end of the machine to enable an operator to gain ready access to the cutter head and feed rollers if necessary. An eccentrically mounted limit bar at the infeed end of the machine provides an adjustable maximum depth of cut limiting means for conditioning the planer to operate within the power limitations of the selected motor by properly adjusting the setting of the limit bar.

3,718,169

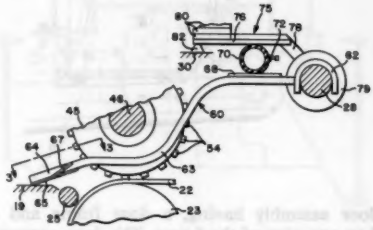
CHIPPING APPARATUS

Irving L. Plough, Everett, Wash., assignor to The Black Clawson Company, Hamilton, Ohio

Filed April 7, 1971, Ser. No. 131,870

Int. Cl. B27b 31/00; B27l 11/00

U.S. Cl. 144—242 R 8 Claims



Pieces of scrap veneer are fed by a conveyor belt across an anvil and into a rotating chipper head. The pieces are held against the anvil by a plurality of laterally spaced pivotal fingers having wide flat tip portions overlying the anvil. An inflatable air bag extends over the fingers and underneath a pivotally supported adjustable weight member for resiliently urging the finger tip portions against the anvil. When the tip portion of one or more of the fingers rises to a predetermined height, the weight member is lifted with the finger so that the holddown force on the veneer does not exceed a predetermined maximum limit.

3,718,170

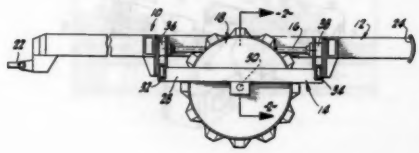
AXLE CUSHIONING ASSEMBLY FOR WHEELS ON CONSTRUCTION EQUIPMENT

Fred Joseph Caron, Citrus Heights; James Oliver Caron, Sacramento, and George Carrol Gray, Fair Oaks, all of Calif., assignors to Caron Compactor Co., West Sacramento, Calif.

Filed Aug. 12, 1970, Ser. No. 63,122

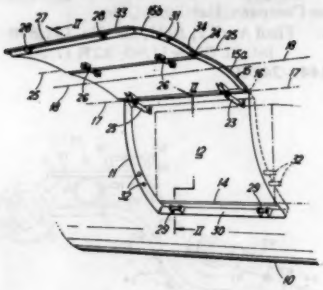
Int. Cl. B60b 9/12

U.S. Cl. 152—49 5 Claims



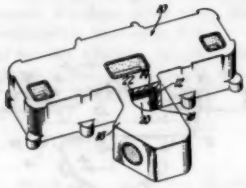
An axle cushioning assembly for absorbing the shock load forces transferred between the wheels and axles of construction equipment. Elastomer sleeves are positioned between an inner sleeve mounted on the axle and an outer concentric barrel mounted to the wheel. Annular retainer means compressably holds the elastomer sleeves in position and provides relief openings permitting limited yieldable extrusion or deformation of the elastomer material under wheel loading.

3,718,171
DOORS
Roy Charles Godwin, Ringwood, England, assignor to British Aircraft Corporation Limited, London, England
Filed Sept. 30, 1971, Ser. No. 185,255
Claims priority, application Great Britain, Oct. 10, 1970, 48,262/70
Int. Cl. E05d *15/08*
U.S. Cl. 160—210 **3 Claims**



A door assembly having, a door frame and a door hinged to one edge of the frame. The door comprises two parts hinged together for limited relative rotation, and an actuator effective with the door in the closed position operatively connecting the two parts so as to vary the effective depth of the door. The edge of the door remote from the main hinge and the corresponding edge of the door frame being provided with engageable hook means. The relative positions of the hook means being such that when the two parts of the door are set for maximum depth the hook means are disengaged from each other, whilst when the two parts of the door are set to a lesser depth the hook means engage each other to positively lock the door in a closed position.

3,718,172
METHOD OF FORMING A THERMALLY INSULATED COMPOSITE ARTICLE
Hal H. Rice, and James C. Holzwarth, both of Birmingham, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed July 16, 1971, Ser. No. 163,324
Int. Cl. B22d *19/08*; F16l *9/16*
U.S. Cl. 164—75 **16 Claims**

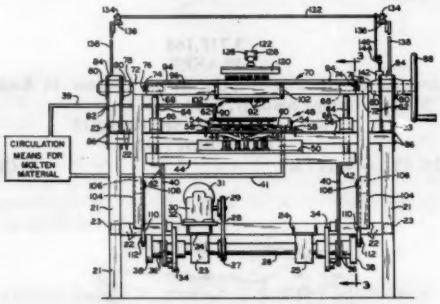


A method of forming a thermally insulated composite article having an inner core surrounded by a cushioning layer and an outer shell. The core member, including at least one continuous inner surface defining a fluid passage therethrough, is either cast or formed from a block of erosion resistant high impact material. The inner surfaces of the core are then coated with a granulated or powdered material which is fused forming an impervious layer and the outer core surfaces are covered with a layer of refractory cushioning material. Finally a metal shell is applied over the cushioning layer to complete the composite article.

3,718,173
METHOD OF REMOVING ALUMINA SCUM FROM A CONTINUOUS-CASTING MOLD
Roland B. Snow, Mount Lebanon Twp., Allegheny County, Pa., assignor to United States Steel Corporation
Filed Aug. 26, 1971, Ser. No. 175,331
Int. Cl. B22d *11/00*
U.S. Cl. 164—82 **9 Claims**

A method of removing alumina scum from the mold of an aluminum-killed continuously cast steel by adding calcium carbide to the molten metal, reacting the calcium carbide with alumina in the molten metal to form a liquid calcium aluminate, and removing the calcium aluminate from the steel.

3,718,174
BATTERY ELEMENT CASTING MACHINE
Donald R. Hull, Perrysburg, and Robert D. Simonton, Fremont, Ohio, assignors to Dynalite Corporation, Perrysburg, Ohio
Filed Sept. 15, 1970, Ser. No. 72,442
Int. Cl. B22d *23/04, 39/00*
U.S. Cl. 164—154 **26 Claims**

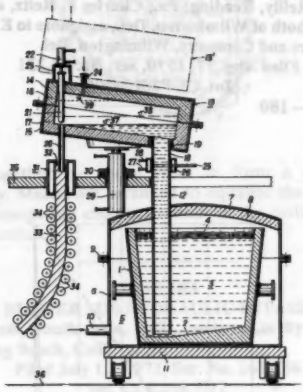


A machine for casting on connecting straps to the lugs of battery plates incorporating a clamping fixture within a traveling invertible carriage which operates in conjunction with an elevator for raising and lowering the battery plates therein with respect to a casting mold. The mold is of a nature that allows it to be filled with a precise quantity of molten metal by a process of overflowing of the wells to be filled, and subsequently permitting recession of the excess molten metal. A deoxidizing flame is directed upon the surface of the mold and molten metal to condition the metal to receive the lugs and is removed immediately prior to the immersion of the lugs in the molten metal.

3,718,175
PLANT FOR CONTINUOUS CASTING WITHOUT DEEP CASTING STREAM PENETRATION
Rudolf Rinesch, Linz, Austria, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria
Filed April 6, 1970, Ser. No. 25,897
Claims priority, application Austria, April 15, 1969, A3607/69; Aug. 14, 1969, A7831/69
Int. Cl. B22d *11/10*
U.S. Cl. 164—254 **15 Claims**

The invention proposes a plant for continuously casting liquid metals comprising a casting mould, a tundish arranged

above the casting mould, adapted to be gastightly sealed and evacuated, and provided with a draining tube extending below the metal level in the mould, a supply ladle for liquid metal, and pneumatic means for conveying the metal from the supply ladle into the tundish, a chamber which is connected with a pneumatic pressure conduit and arranged below the tundish, into which chamber the supply ladle charged with liquid metal is inserted, an ascending pipe line starting from the bottom of the ladle, penetrating the lid of the chamber and leading into the tundish, the length of said ascending pipe line being dimensioned that the level difference between the metal in the



tundish and the metal in the supply ladle exceeds 1.4 m, i. e. the height of the ferrostatic column at atmospheric pressure, and the length of the draining tube being dimensioned that the level difference between the metal in the tundish and the metal in the mould does not exceed 1.5 m. This plant is of great advantage because by releasing the atmospheric ferrostatic pressure the metal flows into the casting mould practically without exerting any pressure so that the solidifying casting shell is prevented from being damaged. The invention permits also of subjecting the steel to a highly effective vacuum treatment.

3,718,176

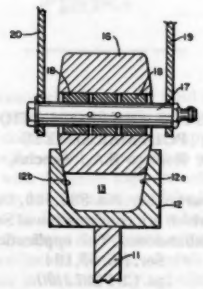
SPREADER WHEEL

Harry M. Jacob, Flemington, N.J., and John C. Lorenzen, Inspiration, Ariz., assignor to Inspiration Consolidated Copper Company, New York, N.Y.

Filed Feb. 11, 1971, Ser. No. 114,496

Int. Cl. B22d *11/06*

U.S. Cl. 164—278 **2 Claims**



In a continuous casting bar machine, a spreader wheel exerts lateral outward pressure against the sides of the casting groove in a casting wheel to minimize shrinking or reduction of groove width.

3,718,177

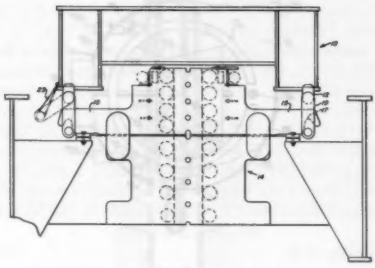
REMOVABLE MOLD ASSEMBLY WITH QUICK CHANGE MECHANISM

George J. Wagner, Jr., McDonald, Pa., assignor to United States Steel Corporation

Filed Aug. 27, 1971, Ser. No. 175,480

Int. Cl. B22d *11/08*

U.S. Cl. 164—282 **5 Claims**



A continuous-casting mold support frame which has engageable and disengageable means for connecting a guide roll rack thereto to enable the latter to be quickly and easily removed and replaced. A hinged lifting member is suspended from the mold support frame, and released to the lifting position beneath guide roll rack lifting lugs when removal of the guide roll rack is desired.

3,718,178

SEALING MEANS FOR A MACHINE FOR CENTRIFUGALLY CASTING PIPES

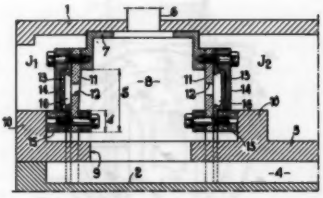
Robert Numa Paul Negre, Fumel, France, assignor to Societe des Fonderies de Pont-A-Mousson, Nancy, France

Filed Sept. 9, 1971, Ser. No. 178,986

Claims priority, application France, Sept. 9, 1970, 7032688

Int. Cl. B22d *13/02*

U.S. Cl. 164—297 **5 Claims**



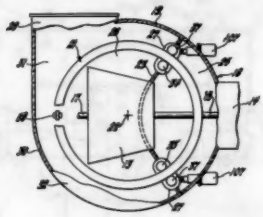
Sealing means for a machine for centrifugally casting pipes. The sealing means comprise a diaphragm interposed between the outer fixed case of the machine and a sleeve which is connected to the rotary mould to rotate with the latter and defines an annular space for cooling water. The diaphragm is integral with the case and with a sealing ring in rubbing contact with the sleeve and has an orifice putting the water jacket, defined by the case, sleeve and diaphragm, in communication with a

pressure-compensating chamber on the other side of the diaphragm relative to the water jacket.

3,718,179
REGENERATOR SEAL

Jack P. Hart, Hinsdale, Ill., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 879,729, Nov. 25, 1969, Pat. No. 3,638,716. This application Nov. 11, 1971, Ser. No. 197,675
Int. Cl. F28d *19/04*
U.S. Cl. 165—9 **2 Claims**

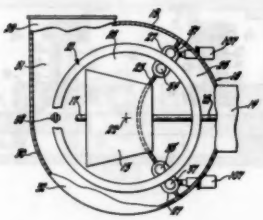


A rotary regenerator of the drum matrix type includes main seals engaging the matrix where it passes through the bulkhead of the regenerator. Each main seal includes a frame closely encircling the matrix with particular means for connecting the main seal to the bulkhead. The connecting means includes a support bar fixed to the bulkhead having a segmented flange extending from the bulkhead and a seal bar forming part of the main seal having the flange overlapping the flange of the support bar. The two flanges are coupled together so as to be relatively expansible in response to diverse temperature conditions in operation of the regenerator. This disclosure incorporated by reference to the parent application, now U.S. Pat. No. 3,638,716

3,718,180
REGENERATOR SEAL

Jack P. Hart, Hinsdale, Ill., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 879,729, Nov. 25, 1969, Pat. No. 3,638,716. This application Nov. 11, 1971, Ser. No. 197,676
Int. Cl. F28d *19/04*
U.S. Cl. 165—9 **2 Claims**

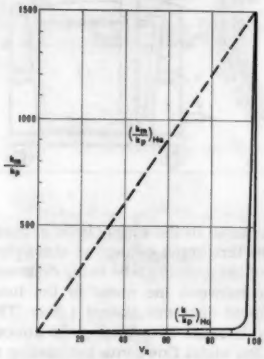


A rotary regenerator of the drum matrix type includes main seals engaging the matrix where it passes through the bulkhead of the regenerator. Each main seal includes a frame closely encircling the matrix with particular means for connecting the main seal to the bulkhead. The frames include side shoes biased by springs against the outer or end faces of the matrix rims. Also, the seal assemblies include bumper stops backed up by bridled springs which allow controlled yielding of the stops if the matrix shifts laterally because of shocks from the vehicle in which the regenerator is mounted. This disclosure incorporated by reference to the parent application, now U.S. Pat. No. 3,638,716.

3,718,181
PLASTIC HEAT EXCHANGE APPARATUS

Thomas A. Reilly, Reading, Pa.; Charles F. Reitz, and Robert D. Smith, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 17, 1970, Ser. No. 64,221
Int. Cl. F28f *21/06*
U.S. Cl. 165—180 **11 Claims**



Hollow plastic filaments, useful in heat exchange systems, which are made from plastic compositions containing 5 to 45 percent by weight of filler particles having substantially higher thermal conductivity than the plastic and a diameter greater than 2.0 microns, will have high thermal conductivity and appreciable mechanical strength if the particles are chosen such that the ratio of the particle diameter to the wall thickness of the filament is between 0.001 and 0.5 and if the particles are dispersed within the plastic homogeneously enough to produce the desired mechanical stability and heterogeneously enough to take advantage of the high thermal conductivity of such a dispersion.

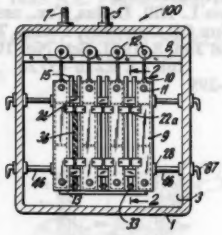
3,718,182
APPARATUS FOR THE PRODUCTION OF CAST POLYMER SHEETS

Carlo Rossetti, c/o Rostero S.A., Acacias, 12, Av., Geneva, Switzerland

Continuation-in-part of Ser. No. 880,500, Dec. 11, 1969, Pat. No. 3,551,541, which is a continuation of Ser. No. 534,525, March 15, 1966, abandoned. This application July 15, 1970, Ser. No. 55,184
Int. Cl. F28f *3/00*
U.S. Cl. 165—166 **8 Claims**

Hollow metal plates, each formed with an interior flow passageway for circulating a fluid heat transfer medium, are

used in apparatus for producing cast polymer sheets which includes a casting chamber. The plates are made of iron or preferably of a light metal, such as aluminum and aluminum alloys, and are constructed of a frame, plates and dividers



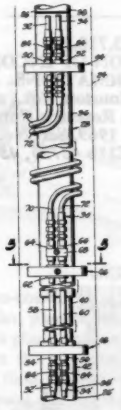
secured together by epoxy resin to form a sealed flow passageway. Means are arranged to equalize the pressure in the flow passageway and the pressure in the casting chamber of the apparatus.

3,718,183

SUBSEA BUMPER SUB HYDRAULIC BYPASS SYSTEM

Lyle B. Scott, South Gate, Calif., assignor to Byron Jackson Inc., Long Beach, Calif.

Filed July 12, 1971, Ser. No. 161,756
Int. Cl. E21b *7/12*
U.S. Cl. 166—.5 **8 Claims**



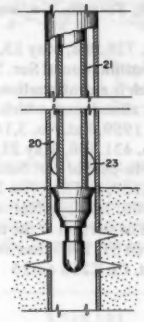
Apparatus for conveying hydraulic fluid under pressure past a telescoping slip joint type subsea bumper sub including three conduit support collars with the first support collar and the second support collar rigidly mounted to a first section of the bumper sub and with the third support collar rigidly mounted to a complementary second section of the bumper sub. A rigid conduit is mounted in fluid conveying relation to the third support collar and mounted in reciprocating relation with the second support collar. A flexible conduit is mounted to the first support collar in fluid conveying relation and connected to the rigid conduit in fluid conveying relation. The flexible conduit means is formed and shaped to continually exhibit a coil configuration disposed about the bumper sub between the first collar and the second collar.

3,718,184

INSULATION FOR A WELLBORE

Jack H. Bayless and Walter L. Penberthy, Jr., Houston, Tex., assignors to Esso Production Research Company

Continuation of abandoned application Ser. No. 12,494, Feb. 2, 1970, which is a division of application Ser. No. 754,887, Aug. 23, 1968, now Patent No. 3,525,399. This application Sept. 21, 1971, Ser. No. 182,496
Int. Cl. E21b *43/24*
U.S. Cl. 166—57 **11 Claims**



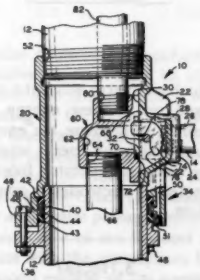
Apparatus for thermally insulating a well for use in a thermal process for oil recovery. The apparatus is a tubular conduit mounted within the well and having a coating of foam consisting essentially of an alkali metal silicate. The insulated tubing may be fabricated on the surface or within the wellbore.

3,718,185

WELL CASING SIE CONNECTOR

William Wellstein, P.O. Box 430, Fostoria, Ohio

Filed Sept. 14, 1971, Ser. No. 180,357
Int. Cl. E21b *33/03*
U.S. Cl. 166—85 **12 Claims**



A well casing section having a radially extending housing having a side delivery duct, and a removable inner connector member provided with an elbow duct aligned with and sealingly connected to the side duct in the casing section along parallel flat surfaces substantially aligned with the wall of the casing. This connection is made by means of hooks on the inner member which engage pin means in the casing section.

Opposite ends of the casing section are provided with fastening means such as threads and/or compression fittings. The compression fitting may be pressurized by the fluid in the ducts of the connector of this invention by providing in the outer member or casing section, a small duct extending from the side duct to the periphery of the compression fitting.

3,718,186

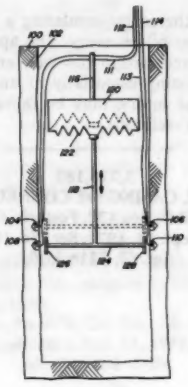
METHOD AND APPARATUS FOR FORMING AND/OR AUGMENTING AN ENERGY WAVE

Clarence W. Brandon, Tulsa, Okla., assignor to Orpha B. Brandon, Tulsa, Okla.; Nat A. Hardin; Catherine H. Newton; Hazel H. Wright, Forsyth, Ga. and Harvey B. Jacob, part interest to each

Division of Ser. No. 728,852, May 13, 1968, Pat. No. 3,503,446, which is a continuation of Ser. No. 511,957, Dec. 6, 1965, abandoned, which is a continuation-in-part of Ser. No. 389,233, July 6, 1964, abandoned, which is a division of Ser. No. 833,122, Aug. 3, 1959, Pat. No. 3,141,099, which is a continuation of Ser. No. 431,388, May 21, 1954, abandoned, which is a continuation-in-part of Ser. Nos. 241,647, Aug. 13, 1951, Pat. No. 2,796,129, and Ser. No. 296,038, June 27, 1952, Pat. No. 2,866,509. This application March 17, 1970, Ser. No. 20, 1967. The portion of the term of this patent subsequent to March 31, 1987, has been disclaimed.

Int. Cl. E21b *43/26*

U.S. Cl. 166—248 **50 Claims**



A method in which an energy wave at a controlled frequency is superimposed on another energy wave transmitted through some medium to increase the energy level and heat the medium through which the energy waves are propagated. One of the energy waves is generated from an electrical current source connected to electrodes in contact with the wave transmitting medium.

3,718,187

METHOD OF INJECTION WELL STIMULATION

Harry W. Milton, Jr., Findlay, Ohio, assignor to Marathon Oil Company, Findlay, Ohio

Filed Feb. 8, 1971, Ser. No. 113,720

Int. Cl. E21b *33/138, 43/22*

U.S. Cl. 166—274 **21 Claims**

Stimulation of injection walls in a heterogeneous reservoir (i.e., characteristically having differing permeability streaks) is improved by temporarily or permanently sealing off the highly permeable streaks with plugging agents and then stimulating the well with a micellar dispersion. This process provides a more uniform profile of the relative permeability of water flowing in the reservoir.

3,718,188

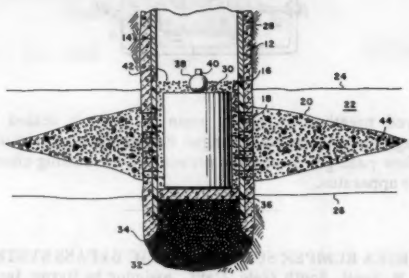
METHOD AND SYSTEM FOR WELLBORE PROTECTION WHEN EXPLOSIVELY STIMULATING EARTH FORMATIONS

William L. Hill, Dallas, Tex., assignor to Sun Oil Company, Dallas, Tex.

Filed Jan. 8, 1971, Ser. No. 104,883

Int. Cl. E21b *43/26*

U.S. Cl. 166—299 **10 Claims**



A method for explosively fracturing an earth formation includes the placement of a shock absorbent liner in the wellbore adjacent the formation to prevent wellbore damage when an explosive is detonated in the wellbore and formation.

3,718,189

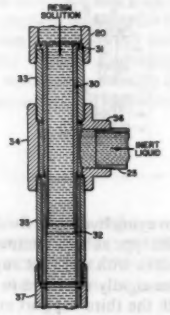
CONSOLIDATION OF INCOMPETENT FORMATIONS

William M. Terry, Houston, Tex., assignor to Esso Production Research Company

Filed July 30, 1969, Ser. No. 845,978

Int. Cl. E21b *43/25, 43/16*

U.S. Cl. 166—305 **1 Claim**



A method for the injection of two or more reactive liquids, a resin and a catalyst for example, into a well in sequence wherein at least one of the reactive liquids is surrounded by an annular stream of an inert, substantially immiscible liquid of lower viscosity as it moves downwardly in the wellbore.

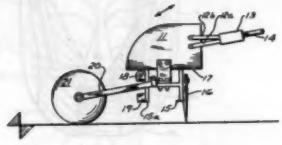
ERRATUM

For Class 172—159 see:
Patent No. 3,718,103

3,718,190
LANDSCAPING IMPLEMENT

Allan A. Perlick, 1635 N.E. Fourth Place, Fort Lauderdale, Fla.

Filed Oct. 21, 1970, Ser. No. 82,663
Int. Cl. A01b *5/00*
U.S. Cl. 172—173 **4 Claims**

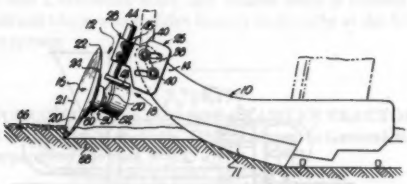


A multi-purpose landscaping implement able to perform simultaneous functions of rolling, raking, pulverizing, and leveling of soil attachable for use on a hydraulic shovel lift or the like of a landscaping vehicle. The amount of weight required for the rolling operation is reduced by using a portion of the weight of the working vehicle.

3,718,191
CLEARING ATTACHMENT FOR PLANTER SHOES

Donald E. Williams, Garden City, Kans., assignor to Acra-Plant, Inc., Newton, Kans.

Filed Aug. 25, 1970, Ser. No. 66,756
Int. Cl. A01b *49/02, 35/22*
U.S. Cl. 172—196 **6 Claims**



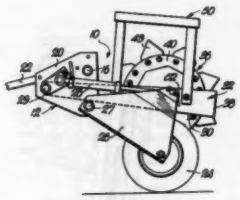
A circular, concavo-convex plate having a sharp, outer edge is attached to a seeder, planter, drill or other seeding implement and rotates in a plane oblique to the course of travel of the implement when the plate engages extraneous surface trash material on the field, whereby the material is shaved and scraped from the topsoil and ejected to one side of the planting row as the implement is advanced, exposing a smooth, clear strip of topsoil into which a groove may be readily formed by the implement in preparation for the receipt of seeds. Alternate forms of structure are provided for attaching the plate in a manner to permit varying the attitude of the plate with respect to the topsoil.

3,718,192
IMPLEMENT TOOL ARM CONTROL

Chester D. Rogers, Olathe, Kans., assignor to Jacobsen Manufacturing Company, Racine, Wis.

Filed Nov. 20, 1970, Ser. No. 91,468
Int. Cl. A01b *35/28*
U.S. Cl. 172—624 **5 Claims**

A towable turf maintenance implement has a heavy, vertically swingable front frame provided with vertically spaced, upper and lower cross pipes common to a series of fore-and-aft extending arms therebetween that are pivoted to the frame forwardly of the pipes for independent vertical swinging. Each of the arms is longitudinally, forwardly tapered and formed from sheet material, and each supports a ground-engaging tool adjacent the rear widened end thereof. During advancement

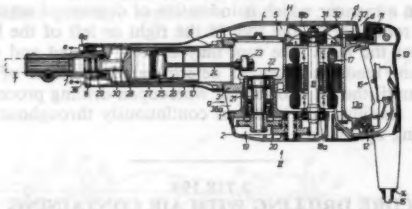


of the implement, the weight of the swingable frame is borne equally by all of the arms through the upper cross pipe until compacted soil or ground contours cause certain of the arms and tools to rise relative to the remaining arms, at which time the entire weight of the frame is borne by the relatively raised arms.

3,718,193
COOLING SYSTEM FOR PORTABLE IMPULSE TRANSMITTING MACHINES

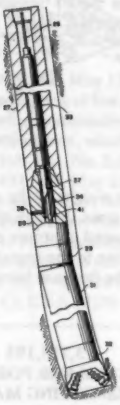
Karl Wanner, Echterdingen, Germany, assignor to Robert Bosch GmbH, Stattgart, Germany

Filed Feb. 18, 1971, Ser. No. 116,545
Int. Cl. B25d *13/00*
U.S. Cl. 173—117 **11 Claims**



A portable impulse transmitting machine wherein an impeller assembly receives motion from an electric motor and serves to drive a tool into concrete, rock or like formations with attendant heating of the motor and impeller assembly. The housing of the machine forms part of the cooling system for the motor and the impeller assembly and accommodates a radial fan which is driven by the motor. A first portion of the housing has a plastic jacket which surrounds the impeller assembly and defines an annular passage one end of which is adjacent to the pressure side of the fan and the other end of which communicates with the atmosphere by way of one or more outlets. A second portion of the housing surrounds the motor and the fan and is provided with one or more inlets for admission of atmospheric air and with one or more channels which connect the inlets with the first end of the passage and draw substantial quantities of atmospheric air along the motor in response to rotation of the fan. A portion of the air which cools the motor is caused to flow through the passage to be expelled by way of the outlets and the housing is provided with additional outlets adjacent to the pressure side of the fan to permit escape of the remaining portion of air which is delivered by the channels.

3,718,194
METHOD AND APPARATUS FOR ORIENTING A BOREHOLE DEVICE
Donald R. Hering and James M. Lindsey, Houston, Tex., assignors to Sperry-Sun Well Surveying Company, Sugar Land, Tex.
Filed Nov. 4, 1970, Ser. No. 86,877
Int. Cl. E21b 47/022, 47/12
U.S. Cl. 174—45 42 Claims



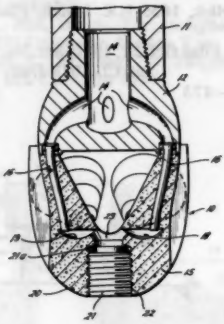
This invention relates to an orienting tool which is positioned in a drill pipe and provided with a conductor cable to the surface. A pendulous instrument in the tool provides a measurement for indicating the high side of the tool in the wellbore. Instrument measurements are transmitted by the conductor cable to the surface for surface read-out. A surface indicator provides the read-out in a manner which is indicative of degrees of rotation of a reference on the tool to the right or left of the high side of the hole. The tool may then be rotated and subsequent readings taken to determine the position of the tool until the bit is oriented, whereupon drilling proceeds. Such readings can be taken continuously throughout the drilling operation.

3,718,195
CORE DRILLING WITH AIR CONTAINING POLYMER IN OIL
Frank H. Clements, Andrews, Tex., assignor to Amoco Production Company, Tulsa, Okla.
No Drawing. Filed Oct. 26, 1971, Ser. No. 192,482
Int. Cl. E21b 49/02
U.S. Cl. 175—58 3 Claims

Polyisobutylene in oil is added to a gas circulated through a well during core-drilling operations. The polymer prevents jerking of the core barrel and the resulting core breakage and loss, which occurs when oil without the polymer is used.

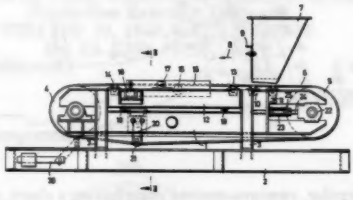
3,718,196
GUIDE AND PROTECTOR ARRANGEMENT INCORPORATING FILL-UP FLOAT VALVE MEANS
Howard I. Lorenz, and Eugene P. Rosser, both of Houston, Tex., assignors to Nobel Drilling Corporation, Tulsa, Okla.
Filed Jan. 21, 1971, Ser. No. 108,449
Int. Cl. E21b 9/00
U.S. Cl. 175—307 15 Claims

A guide and protector arrangement for the lower end of a tubular drill string with drilling means thereon which are to be lowered in a well bore including molded jacket means for protecting the drilling means, the jacket means including passage means therein for communicating fluid between the well bore and the interior of the string and fill-up float valve means



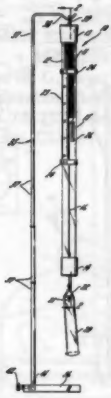
adapted to be removably positioned within the jacket means for controlling the fluid flow between the well bore and the passage means in the jacket means.

3,718,197
CONVEYOR BELT WEIGHING DEVICE
Hans Barten, Porz-Eil, Rudolf Barnewald, Sinnersdorf, and Werner Hanich, Bergheim, Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany
Filed May 16, 1972, Ser. No. 253,883
Int. Cl. G01g 11/14
U.S. Cl. 177—16 4 Claims



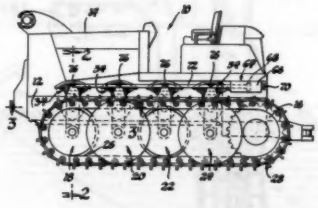
A conveyor belt weighing device suitable for dosing bulk material is provided with an endless conveyor belt guided over two horizontally spaced drums, one of which is a driving drum. The other drum is slidably adjustable lengthwise of the conveyor belt and subjected to the action of helical springs so as to keep the conveyor belt under tension, whereby an indicator attached to one of the springs is movable relative to a fixed scale and permits a direct reading of the tension in said conveyor belt. A weighing member is arranged in the range of the upper strand of the conveyor belt, and the lower strand of the conveyor belt is engaged by two rollers arranged end to end, each having a length of about half the width of the conveyor belt and extend transversely of the belt in a vertical plane parallel to the axes of the drums and at such an angle to each other than the edges of the conveyor belt are disposed in a horizontal plane which is spaced below the center portion of the conveyor belt so as to form a sturdy guide device for the conveyor belt.

3,718,198
WEIGHT LOSS SPRING BALANCE
Clifford C. Hach, Ames, Iowa, assignor to Hach Chemical Company, Ames, Iowa
Filed May 30, 1972, Ser. No. 257,925
Int. Cl. G01g 3/02
U.S. Cl. 177—232 4 Claims



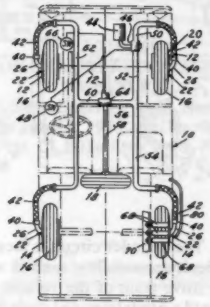
A spring balance in which a coil spring is suspended in a transparent cylindrical tube between a cap assembly, to which the spring is adjustably attached for calibration, and a strand slidably fitted in a bottom guide plug on the tube. The strand carries a hook to hold an object to be weighed, and the cap is suspended by a telescoping rod removably fitted in a weighted base. A scale plate is slidably secured on the outside of the tube, and a reference mark and vernier scale is formed on a cylindrical block which slides loosely in the tube at the bottom of the spring.

3,718,199
SUSPENSION SYSTEM FOR CRAWLER TRACTOR
Janis Mazzarins, Macedonia, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed July 2, 1971, Ser. No. 159,195
Int. Cl. B62d 55/16
U.S. Cl. 180—9.2 R 4 Claims



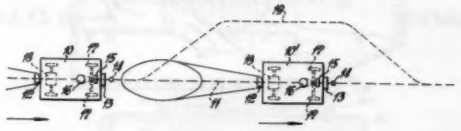
A suspension system for resiliently supporting a crawler tractor that includes a plurality of wheel strut assemblies located at each side of the tractor. Each of the wheel strut assemblies have a housing that supports a wheel carrier for oscillatory movement about a longitudinal axis that extends transversely to the tractor and also for vertical movement.

3,718,200
SUSPENSION DEVICE
Lawrence A. Gant, 20348 Anita Ave., Harper Woods, Mich. 48236
Original application Mar. 5, 1968, Ser. No. 710,456, now Patent No. 3,528,679, dated Sept. 15, 1970. Divided and this application Sept. 1, 1970, Ser. No. 68,791
Int. Cl. B60g 17/00
U.S. Cl. 180—74 3 Claims



A suspension device to improve vehicle mobility comprising means disposed above a vehicle tire to limit and cushion its extreme vertical displacement by contact therewith. Interruption of the vertical movement compresses the tire thereby cushioning and dampening its passage.

3,718,201
ARRANGEMENT FOR AUTOMATICALLY CONTROLLING THE MOVEMENT OF MOTOR VEHICLES
Richard Schleupen, Grossingersheim, and Ferdinand Grob, Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Oct. 7, 1970, Ser. No. 78,674
Claims priority, application Germany, Oct. 9, 1969, P 19 50 863.5
Int. Cl. B60k 27/06
U.S. Cl. 180—98 8 Claims

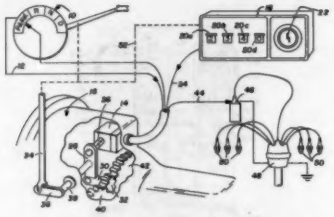


Vehicles moving along a predetermined conductor path have a frequency modulated spotlight on their rear ends and, on their front ends, a frequency selective receiver comprising a photocell, which, when shone upon, produces a signal that either stops the vehicle or shunts it onto a detour path to avoid a collision.

3,718,202
VEHICLE ANTI-THEFT SYSTEM
Donald J. Brock, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed May 20, 1970, Ser. No. 38,954
Int. Cl. B60r 25/06
U.S. Cl. 180—114 15 Claims

A system is disclosed which includes an encoder panel adapted to be mounted in an accessible location to enable the entering of a code sequence therein by an operator. A decoder circuit is remotely disposed in a secure location adjacent a

lock mechanism and is responsive to the encoder panel to generate an electrical energizing signal only upon detection of a predetermined code which is entered into the encoder panel. Structure is connected to the decoder circuit which operates the lock mechanism only upon generation of the electrical energizing signal. In the preferred embodiment of the invention, the encoder panel is located in the passenger compartment of a vehicle. The decoder circuit is located in an area of the vehicle of difficult accessibility, such as within the vehicle transmission. The drive train of the vehicle is locked by the lock mechanism until a predetermined code is entered into the encoder panel. Circuitry may also be provided to prevent ignition of the vehicle motor until the predetermined code is entered into the encoder panel.



3,718,203

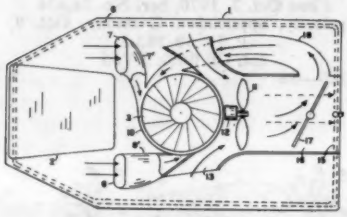
GROUND EFFECT VEHICLE WITH INTEGRATED FORWARD THRUST MEANS

Walter R. Lehman, 64 Spruce Street, Hicksville, N.Y.

Filed Aug. 30, 1971, Ser. No. 176,006

Int. Cl. B60v *1/08, 1/14*

U.S. Cl. 180—120 **3 Claims**



An air cushion vehicle is provided which utilizes a single motor to provide the air cushion and forward thrust. Front mounted air intakes are connected as inputs to a fan. The fan is driven by air by a propeller which also provides forward thrust through a rear port. When the craft is moving forward the air from the front intakes drive the fan so as to provide a portion of the air cushion. A control vane is provided adjacent to the rear port for controlling the air from the propeller. This vane determines the amount of air fed to the fan and to the rear port. The vane may also be used for steering purposes.

3,718,204

DISPLAY OF BOREHOLE WALL CONFIGURATION

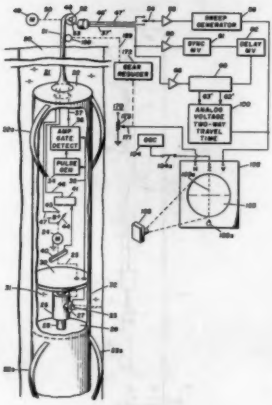
Goethe M. Groenendyke, Dallas, Tex., assignor to Mobil Oil Coropration, New York, N.Y.

Filed Jan. 18, 1971, Ser. No. 107,384

Int. Cl. G01v *1/36*

U.S. Cl. 181—.5 BE **24 Claims**

The specification discloses a borehole tool having a directional acoustic transducer which is rotated while logging and operated periodically to transmit acoustic pulses to the borehole wall and to detect reflected acoustic energy. Reflection signals are employed to produce an analog voltage having amplitude variations which are dependent upon the pulse travel time or distance between the transducer and the borehole wall. The analog voltage, in one embodiment, is combined with a sawtooth wave beam sweep of an oscilloscope and applied to one of the deflection plates to move a



spot across the screen at a rate which varies as a function of distance between the transducer and the wall of the borehole. The electron beam is turned ON periodically at equally spaced time intervals during each beam sweep to produce trace patterns which are recorded in side-by-side relationship. Spots at the same time intervals across the trace patterns form clearly defined caliper traces having excursions indicative of the size of the borehole at different depths.

3,718,205

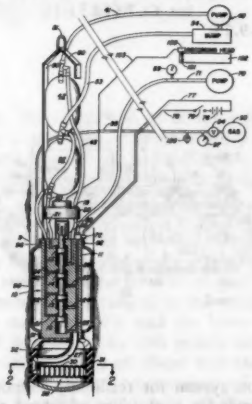
BORE HOLE SEISMIC TRANSDUCER

Delbert W. Fair, 2221 E. Hartford, and Graydon L. Brown, 1528 Autumn Rd., both of Ponca City, Okla.

Filed June 22, 1970, Ser. No. 48,252

Int. Cl. G01v *1/14;* **F01b** *7/04;* **F15b** *5/00*

U.S. Cl. 181—.5 H **7 Claims**



A vibrational seismic source device adapted to be lowered in a well bore. The vibrator essentially comprises a volume booster operating an expandable bellows-type source con-

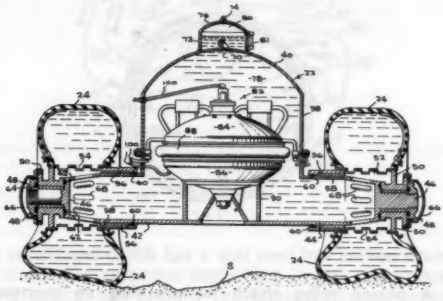
nected between two pistons biased against opposite walls of the bore hole. The volume booster is driven by a hydraulic amplifier which in turn is controlled by a servo hydraulic valve. The hydraulic vibratory system is centered and retained in the well bore by utilizing a packer arrangement totally surrounding the vibrator and adapted to be expanded against the bore hole. A high pressure, high volume hydraulic source is provided up hole and operationally connected to the servo valve, volume booster, and biasing means.

3,718,206

AMPHIBIOUS SEISMIC EXPLORATION VEHICLE AND METHOD

John J. Babb, and Marvin G. Bays, both of Jackson, Miss., assignors to Delta Exploration Company, Inc., Jackson, Miss.

Filed Jan. 18, 1971, Ser. No. 107,247
Int. Cl. G01v *1/14*
U.S. Cl. 181—.5 VM **27 Claims**



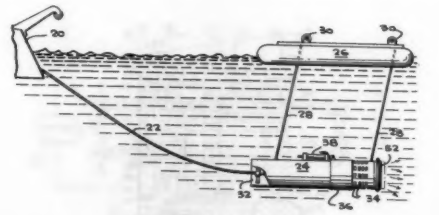
A seismic signal providing vehicle is provided in the form of pneumatic tires rollingly supporting a hollow metal casing with a body of liquid on the interior of the casing communicating with the interior of the tires and an expandible acoustic signal transducer being positioned in the body of liquid in the casing for activation for transmitting a pressure pulse to the surface of the tires from which the signal is radiated into the environmental surroundings of the tires either on dry land or under water.

3,718,207

METHOD AND APPARATUS FOR PROVIDING UNDERWATER SEISMIC ENERGY SIGNALS

John J. Babb, Jackson, Miss., assignor to Delta Exploration Company, Inc., Jackson, Miss.

Filed Dec. 10, 1969, Ser. No. 883,809
Int. Cl. G01v *1/38*
U.S. Cl. 181—.5 H **12 Claims**



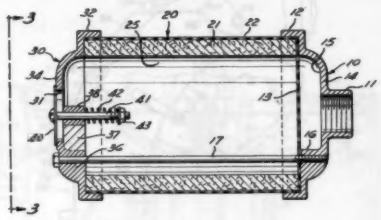
A seismic energy source provided in the form of a hollow cylindrical member supporting a drum plate on its rear end and connected to a tow line on its forward end for movement through a body of water with rapid-actuating valve means on the rear of the cylindrical member which, when closed, entraps a large mass of water the inertia of which resists continued movement of the cylindrical member; a piston and cylinder assembly is connected to the tow line by a piston rod so that the momentum of the towing vessel moves the piston with respect to the cylinder to pressurize a pressure accumulator to a desired pressure at which point a release coupling between the rod and the tow line is activated to permit the rod to be forcefully urged at a high speed rearwardly to strike the drum plate to provide a seismic signal.

3,718,208

EXPANSION CHAMBERED, PRESSURE RELIEF MUFFLER

Stephen J. Gibel, 5846 Edgerton Road, North Royalton, Ohio

Filed July 15, 1971, Ser. No. 162,785
Int. Cl. F01n *1/10, 7/16, 7/18*
U.S. Cl. 181—50 **6 Claims**



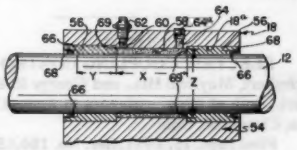
Muffler for air-exhausts and the like in which sound is muffled by passage of the air from a relatively unrestricted domed expansion chamber through a disseminator into a silencing chamber and thence diffused through porous side of the silencing chamber. The end of the silencing chamber opposite the disseminator is provided with a pressure relief means.

3,718,209

LUBRICATING MECHANISM

Ernest P. Moslo, 12700 Lake Avenue, Lakewood, Ohio

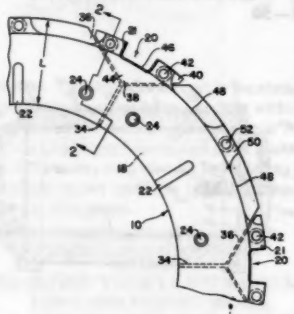
Filed Dec. 10, 1970, Ser. No. 96,722
Int. Cl. F16n *1/00*; F16c *33/72*
U.S. Cl. 184—5 **13 Claims**



A lubricating mechanism for lubricating relatively movable members which are movable linearly relative to one another, and comprising a recess or chamber formed in one of the members and opening onto the other of the members, with bearing means arranged between the members and defining in part the chamber, and sealing means coacting with the bearing means for sealing a lubricant in the bearing means and in the chamber. A passageway communicates with the chamber and extends to the exterior of the movable member for inserting the lubricant, into the chamber. Another passageway communicates with the chamber to exteriorly of the movable member and is closed by removable means so that old lubricant can be forced out of the recess and replaced by new lubricant when and if so desired. The bearing means comprises spaced bearings with the lubricant chamber disposed intermediate the bearings, and with the length of the chamber being at least ap-

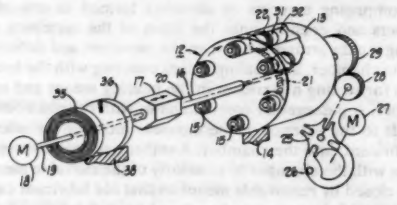
proximately one and one half times the effective length of one bearing. The arrangement is such so as to provide a substantially maintenance free, long service life lubricating mechanism for machine components, and is especially useful in connection with injection molding machines, although it may also be readily used in other types of machines.

3,718,210
ROTATING BRAKE DISC SUBASSEMBLY WITH SEGMENTED BERYLLIUM CORE
Joseph Frank Dernovshek, Akron, and Peter D. Bermingham, Suffield, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed June 24, 1970, Ser. No. 49,242
Int. Cl. F16d 65/12
U.S. Cl. 188—218 XL 13 Claims



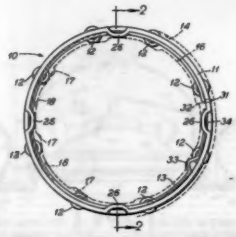
Brake discs which have a pair of annular steel plates and segmented beryllium filler plates between the annular steel plates. The steel plates have sintered metallic outer faces and are riveted together on opposite sides of the beryllium plates. The beryllium filler plates extend from the center of one key slot to the center of the adjacent key slot and each of the filler plates is sloped at its outer end so that the adjacent filler plates define a V-shaped notch centered with the key slot. Triangular steel inserts are riveted to the steel plates at the key slots. The triangular inserts serve to transmit torque across a broad area to the beryllium filler pieces by wedging action between the sides of the inserts and the sloped portions of the filler plates.

3,718,211
ELECTRIC COUPLING CONTROL
Karl P. Schubert, Mayfield Hts., and George R. Rienerth, Fairview Park, both of Ohio, assignors to Acme-Cleveland Corporation, Cleveland, Ohio
Filed Sept. 15, 1971, Ser. No. 180,651
Int. Cl. F16d 67/02
U.S. Cl. 192—12 D 17 Claims



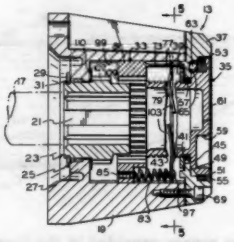
An electric coupling control for a multiple spindle automatic machine is disclosed with the machine having an indexable spindle carrier with a plurality of rotatable spindles. An electric clutch and brake unit is provided for each spindle and the clutch or the brake is selectively energized through a brush and commutator assembly so that selectively either the clutch or the brake may be engaged for a particular spindle for each spindle position of the spindle carrier. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,718,212
PHASED ROLLER CLUTCH
John E. Havranek, Schaumburg, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Dec. 1, 1971, Ser. No. 203,601
Int. Cl. F16d 41/06
U.S. Cl. 192—45 10 Claims



A phased roller clutch for providing an overrunning coupling between a cammed race and a smooth race is provided with a split ring energizing spring so constructed and arranged that one end of the spring is wedged between the cage and the cammed race during overrunning operation of the clutch to prevent displacement with respect to the cammed race. A clutch consisting of cage, rollers and energizing spring can be preassembled as a unitary assembly for insertion between a pair of races without requiring that the spring end be separately connected to the cammed race. Integral means is provided for centering the clutch assembly on the cammed race, and means is provided for preventing axial displacement of the spring from the roller assembly.

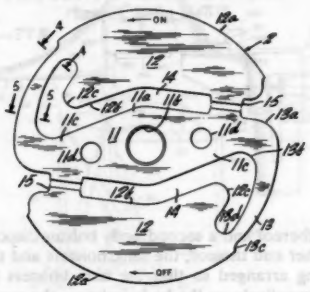
3,718,213
WHEEL HUB CLUTCHING MECHANISM
Frank Hegar, Oregon City, and Timothy E. Fleskes, Portland, Oreg., assignors to Warn-Belleview, Inc., Portland, Oreg.
Filed Feb. 24, 1971, Ser. No. 118,294
Int. Cl. F16d 11/04
U.S. Cl. 192—67 R 13 Claims



A wheel hub clutching mechanism has a dial which, when turned to a "free" position, moves an actuator

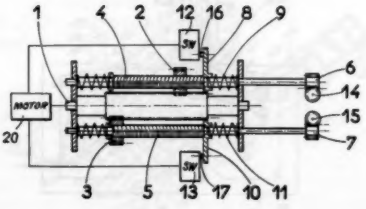
nut to place springs under tension to move a clutch out of mesh with a shaft driven pinion. When the dial is moved to a "lock" position, it moves the actuator nut to place the springs under compression to move the clutch into mesh with the pinion. The dial has a threaded portion which drives the nut along a splining rod which insures correct indexing of the nut relative to the dial.

3,718,214
CENTRIFUGAL CLUTCH
Albert K. Newman, Noroton, Conn., assignor to Textron Inc., Providence, R.I.
Filed May 4, 1971, Ser. No. 140,079
Int. Cl. F16d 7/30
U.S. Cl. 192—105 CD **7 Claims**



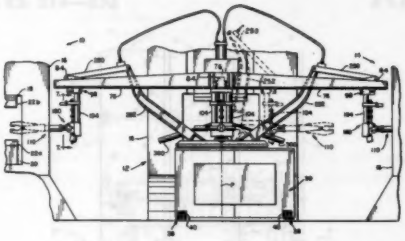
A centrifugal clutch has a soft steel low carbon drum and a one-piece cast rotor comprising an iron bar portion with a central hub portion, two segment shaped weight portions each having a circumferential extent of at least 90° and a radial extent of at least 25% of the overall diameter of the rotor and integral thin spring portion connecting opposite ends of the cross bar with the weight portions respectively, each spring portion extending a circumferential extent of the order of 30° to 50° and spaced radially inwardly out of engagement with the drum. The weight portions have centrifugal forces which engage the drum when the rotor is rotated at or above a critical speed to drive the drum.

3,718,215
DEVICE FOR LIMITING THE NUMBER OF REVOLUTION OF A ROTATING SHAFT
Robert Mimeur, Sallanches, France, assignor to Ets. Carpano & Pons SA, Clauses, France
Filed Jan. 18, 1971, Ser. No. 106,961
Claims priority, application France, Jan. 19, 1970, 7001743
Int. Cl. F16d 71/00; H01h 3/16
U.S. Cl. 192—141 **3 Claims**



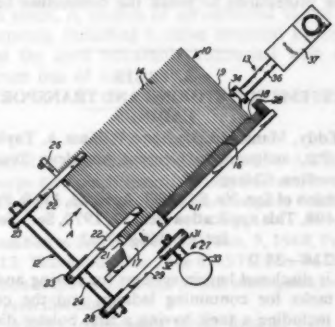
A spline shaft rotatably driven by driving means meshes with two pinions having internally threaded bores engaging on two elongate members, partially screw threaded along their length, so that the pinions move along the elongate members in opposite directions upon rotation of the spline shaft. The pinions actuate stopping means after a certain number of revolutions of the spline shaft in a given direction. The elongate members are manually rotatable to adjust the starting positions of the pinions, and set the desired number of revolutions. Spring means urge the pinion towards the threaded parts of the elongated members if a pinion engages a non-threaded part of the member as a result of failure of the stopping means or over-adjustment of the starting position.

3,718,216
FORMING PRESS SYSTEM AND WORKPIECE HANDLING AND TRANSFER APPARATUS THEREFOR
Walter W. Wilson, Levittown, Pa., assignor to E. W. Bliss Company, Canton, Ohio
Filed Apr. 1, 1969, Ser. No. 812,268
Int. Cl. B65g 29/00
U.S. Cl. 214—1 BC **4 Claims**



A forming press system wherein the presses are positioned in groups about a central point and transfer of workpieces between presses is accomplished by a rotating handling apparatus.

3,718,217
APPARATUS FOR FEEDING SIGNATURES
Anton R. Stobb, Rudolph C. Stobb, and Walter J. Stobb, all of R.D. 1, Pittstown, N.J. 08867
Filed Aug. 22, 1969, Ser. No. 852,297
Int. Cl. B65g 59/02
U.S. Cl. 214—8.5 A **8 Claims**



Method and apparatus for feeding signatures which are folded and disposed in a stack. The folded edges cause the stack to be longer along the folded edge, and there is a problem of handling the stack with the protruding folded edges. The method and apparatus utilize friction

means, such as brushes or tapes of friction material, either of which is disposed along the bed supporting the stack, and the folds are supported on the friction means to retard movement of the folds as the stack is moved along the bed. The friction means may be either stationary or it may be moving at a lesser speed than the speed of the stack which is subjected to a conveyor, or the friction means may be moving in the direction opposite to that of the conveyor, all for retarding the movement of the folded edges and thereby square up the stack. Also, gripper means are employed for singly removing the signatures from the stack.

3,718,218

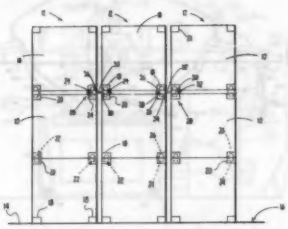
SHIPPING AND STORAGE CONTAINER INTERLOCK

Charles J. Shields, Oakland, Calif., assignor to States Steamship Company, San Francisco, Calif.

Filed Oct. 13, 1971, Ser. No. 188,926

Int. Cl. B65g *1/14*

U.S. Cl. 214—10.5 R **20 Claims**



A horizontal connection between at least two adjacent stacks of vertically stacked cargo containers having means between the containers in each stack positioning, aligning and interlocking such containers. A horizontal stack interlock member is disposed on top of at least one container in each stack at like stack elevations and is releasably secured to its supporting container. The interlocking member is rotatable about a vertical axis through a limited arc and includes at least one protrusion for horizontal alignment with the protrusion in the interlocking member on the adjacent container stack. A rigid toothed rack between the two members engages the protrusions and thereby horizontally interlocks the containers in the adjacent stacks. By rotating the interlocking members through the vertical axes, the toothed rack can be released from the protrusions to break the connection between the stacks.

3,718,219

SYSTEMS FOR STORING AND TRANSPORTING LADINGS

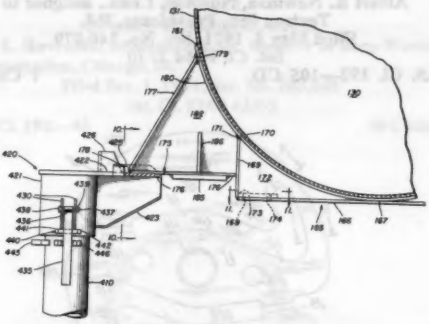
Ira C. Eddy, Mansfield, La., and William A. Taylor, Sharpsville, Pa., assignors to General American Transportation Corporation, Chicago, Ill.

Division of Ser. No. 817,907, April 21, 1969, Pat. No. 3,595,408. This application Dec. 17, 1970, Ser. No. 100,246

Int. Cl. B65g *67/02*

U.S. Cl. 214—38 D **11 Claims**

There is disclosed herein systems for storing and for transporting tanks for containing ladings, and the components thereof, including a tank having a first bolster disposed adjacent to one end thereof and a second bolster disposed adjacent to the other end thereof, a stationary support station including a first pair of spaced-apart support posts disposed on opposite sides of a longitudinal axis and a second pair of spaced-apart support posts disposed on opposite sides of the longitudinal axis and spaced from the first pair of support posts, the first and second support posts carrying first and second support structure respectively, the first and second support structures being shiftable between receiving positions and supporting positions, the tank bolsters and the support posts and the support structures being arranged so that the tank bolsters can be positioned upon the support structures when the support structures are in the supporting positions thereof, a road vehicle including a frame provided with road wheels and having a first body bolster disposed adjacent to



one end thereof and a second body bolster disposed adjacent to the other end thereof, the tank bolsters and the body bolsters being arranged so that the tank bolsters can be positioned respectively on the body bolsters, the support posts in each pair of support posts being spaced-apart a distance to receive the road vehicle therebetween with the tank mounted thereon when the support structures are in the receiving positions thereof, and lifting means on the frame for causing relative vertical movement between the tank and the support structures.

3,718,220

DEVICE FOR THE PEELING AND EXTRACTING OF SOLID MATERIAL FROM A CENTRIFUGE

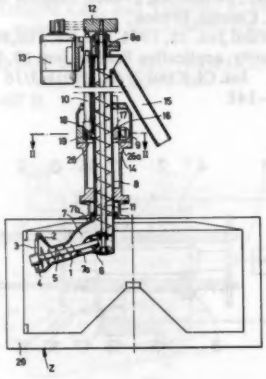
Hans-Joachim Titus, Von-Hees-Strasse 5, 6148 Heppenheim-Bergstrasse, Germany

Filed July 2, 1970, Ser. No. 51,890

Claims priority, application Germany, July 2, 1969, P 19 33 545.6

Int. Cl. B65g *65/38*; B04b *11/00*

U.S. Cl. 214—17 DB **11 Claims**



A device for the peeling and extracting of solid material from a centrifuge, especially from a vertical centrifuge, during centrifuge operation, the device including a vertical well hous-

ing mounted on the centrifuge cover, a vertical extraction tube extending through the housing and into the centrifuge, a sideways extending pickup duct with a peeling head connected to the lower end of the extraction tube, and screw conveyors inside both the pickup duct and the extraction tube. The extraction tube is guided inside the well housing for rotational motion and for vertical motion, so that the peeling head can be approached and retracted from the centrifuge drum wall and moved vertically therealong. Hydraulic cylinders provide the rotational and vertical motions.

3,718,221

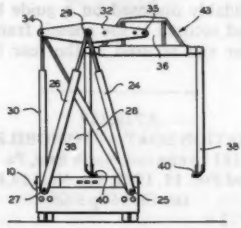
LOAD TRANSFER MECHANISM

Peter J. Visser, Niles, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Oct. 7, 1971, Ser. No. 187,362

Int. Cl. B60p *1/48*

U.S. Cl. 214—77 R **10 Claims**



A transfer mechanism for transferring a load from one side of the mechanism to the other. A pair of main linear actuators is located at each end of the mechanism. The lower ends of the main actuators at each end are pivotally connected adjacent opposite sides of the mechanism. The upper ends of the main actuators are pivotally connected to an intermediate location on a transverse elongated boom arm which is located at each end. There is also a pair of auxiliary actuators at each end of the mechanism. These actuators likewise each have their lower ends pivotally connected adjacent the sides of the mechanism while the upper ends are connected to one end of each of the boom arms respectively.

3,718,222

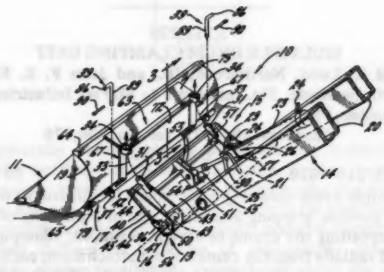
COUPLING FOR DETACHABLE IMPLEMENTS

Phillip W. Foster, c/o Lee Blacksmith, Lee, Ill.

Filed Dec. 11, 1970, Ser. No. 97,248

Int. Cl. E02f *3/70*

U.S. Cl. 214—145 **1 Claim**



A coupling for detachably connecting a farm implement with a movable boom includes a first part with a frame mountable on the free end of the boom for rotation relative thereto and for bodily movement therewith through a predetermined arc. A pair of spaced apart mounting posts extend outwardly of the edge of the frame and are moved with the latter through that arc to fit within a pair of collars mounted on the back of the implement. Once the posts are inserted into the collars, a pressure fluid cylinder mounted on the boom and connected to the frame is actuated to rotate the latter clockwise drawing the back of the implement against the frame. This aligns a portion of a connector mounted on the frame with a cooperating portion of the connector mountable on the implement. Thereafter, a pin inserted through the connector portions holds the connector together to prevent the posts from being withdrawn from the collars.

3,718,223

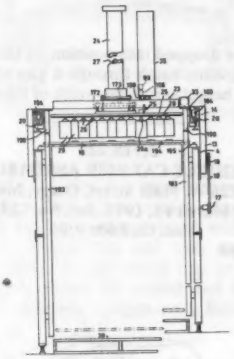
METHOD OF PALLETIZING CANS

Konrad Emil Meissner, Lafayette, Calif., assignor to Filper Corporation, San Ramon, Calif.

Original application Dec. 4, 1969, Ser. No. 881,978, now Patent No. 3,662,902, dated May 16, 1972. Divided and this application Mar. 30, 1971, Ser. No. 117,923

Int. Cl. B65g *57/04*

U.S. Cl. 214—152 **3 Claims**



An air-actuated palletizer for cans having a vertically reciprocable platen with vacuum cup for connection with cans on a conveyor carried against a pattern forming bar over which the cans are elevated by said cups and moved to a loading position for lowering said cans onto a pallet supported stack. A system of air-actuated valves controls the movements, including a valve actuated by movement of one of the cans releasably connected with and suspended from one of said cups.

3,718,224

MACHINE FOR UNLOADING TRAYS OF ARTICLES

James George Edward Hillman, 2 Evelyn Street, London, England, assignor to Milins Machine Company Limited, London

Continuation of Ser. No. 702,981, Feb. 5, 1968, Pat. No. 3,595,413. This application June 8, 1971, Ser. No. 150,980

The portion of the terms of this patent subsequent to July 27, 1988, has been disclaimed.

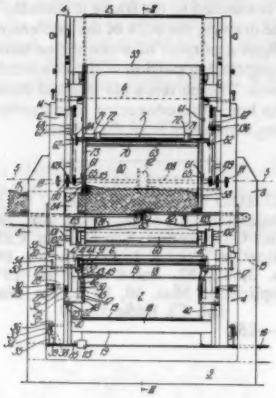
Claims priority, application Great Britain, Feb. 6, 1967, 5,607/67

Int. Cl. B65g *47/52*

U.S. Cl. 214—302 **15 Claims**

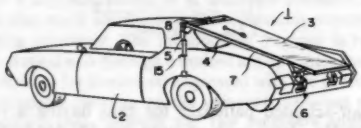
Apparatus for discharging a stream of cigarettes or other rod-like articles from a succession of containers carrying batches of the articles includes means for contacting the upper

surface of each batch of articles while the stream of articles is being withdrawn to maintain the upper surface of the batch substantially flat and horizontal, so that the succeeding batch



of articles can be dropped into position on the article remaining from the previous batch through a gap which is substantially uniform in height across the width of the batch.

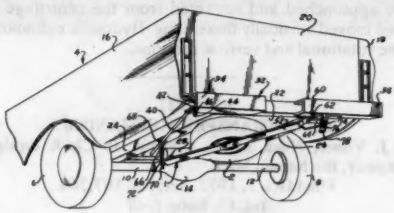
3,718,225
VEHICLE CARRIER ASSEMBLY
John B. Duren, 126 W. Main Street, Osage, Iowa
Filed March 11, 1971, Ser. No. 123,208
Int. Cl. B60r *9/00*
U.S. Cl. 214—450 **5 Claims**



A carrier assembly for transporting a vehicle or other object of an automobile or the like wherein the carrier includes a slideable platform to lift the object into transporting position. The platform is slideably mounted in a frame adapted to be attached to the transporting vehicle in a sloped orientation to readily effect reciprocating movement of the platform from the ground to the transported position and vice versa. A hand crank and cable is attached to the frame to control the desired movement of the platform upwardly or downwardly. The crank and cable can also be used to secure a vehicle or other object to the carrier platform and at the same time secure carrier platform to the carrier frame.

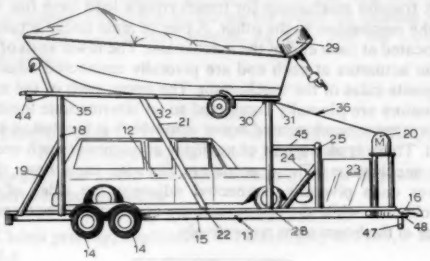
3,718,226
SPARE TIRE MOUNT FOR PICKUPS
Walter E. Penley, 1104 Emerson Lane, Denton, Tex. 76201
Filed Dec. 8, 1971, Ser. No. 205,844
Int. Cl. B60r *9/00*
U.S. Cl. 214—451 **15 Claims**

A carrier for supporting a spare tire and wheel assembly beneath the chassis frame of a vehicle adapted to permit lineal movement of the assembly from beneath the vehicle and rotational movement of the assembly to orient the assembly in a vertical position. The wheel assembly is carried by a support bar having one end detachably secured to the rear bumper of the vehicle and



another end slidably disposed on a guide bar. The guide bar has one end secured to the chassis frame of the vehicle and another end secured to the rear bumper of the vehicle.

3,718,227
A COMBINATION BOAT-AUTOMOBILE TRAILER
Merle E. Swift, 161 Lynnwood, North East, Pa.
Filed Feb. 11, 1971, Ser. No. 114,617
Int. Cl. B60p *3/08*
U.S. Cl. 214—512 **6 Claims**

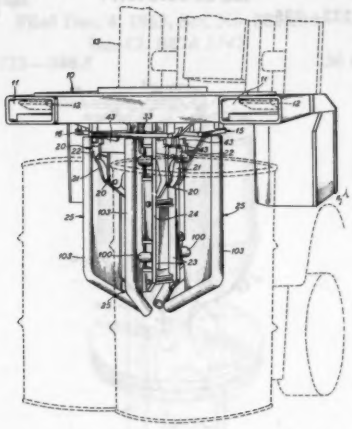


A semi-trailer is disclosed for supporting both a boat, a boat trailer and an automobile. The trailer has a frame with a hoist on it adapted to carry a boat and boat trailer in an elevated position and to carry an automobile on the trailer below the boat.

3,718,228
MULTIPLE DRUM CLAMPING UNIT
Harold E. Lund, Northbrook, Ill., and John F. E. Ericson, North Seminole, Fla., assignors to Marvel Industries, Inc., Evanston, Fla.
Filed Nov. 18, 1971, Ser. No. 200,076
Int. Cl. B66f *9/06*
U.S. Cl. 214—620 **10 Claims**

Multiple drum clamping attachment for lift trucks or other lifting devices, gripping and lifting one or a plurality of drums and depositing the drums in upright positions. Clamping jaws extend radially from the center of the attachment, each pair of which clamping jaws engages beneath and within the bead of a drum upon lowering movement of the attachment into engagement with the top of the drum and come into clamping engagement with the bead of the drum as elevated. The drums are maintained in generally vertical positions during lifting

and lowering thereof by straightening abutments, extending generally radially from the center of the attachment on opposite sides of the clamping jaws. Each pair of straightening guides is adapted to engage the side of a drum on opposite



sides of the clamping jaws and to extend downwardly along the drum beneath the center of gravity of the drum, to hold the drum from tilting during upward lifting movement of the drum.

3,718,229

NONEVERTING BOTTOM FOR THERMOPLASTIC BOTTLES

Nathanial Convers Wyeth, Mendenhall, Pa.; Ronald Newman Roseveare, and Keith Stewart Carmichael, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 26, 1971, Ser. No. 192,059
Int. Cl. B65d *1/02*
U.S. Cl. 215—1 C **6 Claims**

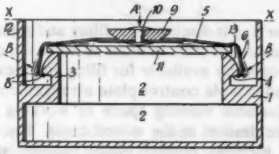
A generally cylindrical, biaxially oriented thermoplastic bottle for bottling liquids under pressure, such as beer, soda and aerosols, having a noneverting bottom under conditions of bottling and use. The bottom of the bottle in the unpressurized state comprises a shell of thermoplastic material having a configuration defined as a series of sequentially connected geometric shapes rotationally symmetrical about the central axis of the bottle starting with (*a*) about a 90° portion of a circle connected to the generally cylindrical section of the bottle, forming the annular bottom edge, connected to (*b*) a straight line forming a flat section which is the bottom seating area of the bottle, connected to (*c*) about a 90° portion of a circle forming an annular toroidal knuckle turning into (*d*) a straight line forming a re-entrant cylinder connected to (*e*) about a 180° portion of a circle forming a recessed annular toroidal knuckle ending with (*f*) a straight line forming a recessed disc in the bottom center of the bottle. To further improve eversion resistance, the bottom of the bottle can include a reinforcing ring attached to the recessed annular toroidal knuckle. Under an autogenous pressure, the bottle dimensions remain practically the same except that the flat bottom seating area moves outward and the bottle now stands on the annular toroidal knuckle that turns upward into the re-entrant cylinder.

3,718,230

CHILD-PROOF CONTAINERS

Peter Henry James, London, England, assignor to Quartz Investments Limited, Nassau, Bahamas

Filed May 13, 1971, Ser. No. 143,043
Claims priority, application Great Britain, May 14, 1970, 23,515/70
Int. Cl. B65d *43/10*
U.S. Cl. 220—60 A **9 Claims**



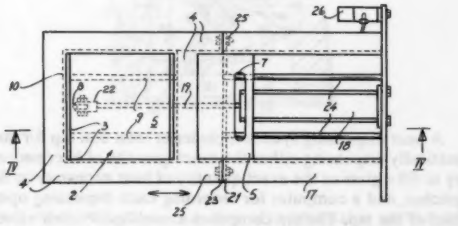
A child-proof container for medications and other potentially injurious substances which comprises an unbreakable body having a mouth fitted with a snap action or other safety closure cap and also comprises a wall which closely surrounds the fitted cap so that the plane of its free edge is above the mouth and fitted cap when the container is standing upright on a horizontal surface.

3,718,231

CLOSURE ASSEMBLY FOR A BULK CONTAINER

Liam O'Connor, Castleisland, Ireland, assignor to Liam O'Connor and Company Limited, Tonbwee, Castleisland, Ireland

Filed Dec. 16, 1970, Ser. No. 98,751
Claims priority, application Ireland, Dec. 22, 1970, 1693
Int. Cl. B65d *43/12*
U.S. Cl. 220—41 **6 Claims**



The invention relates to a power operated closure assembly, such as a hydraulically operated slide plate door, for the outlet of a bulk storage container for granular material. The drive unit of the closure assembly is detachable and the closure assembly is so arranged that with the drive unit detached the clo-

sure assembly may be operated manually. Removal of the drive unit facilitates maintenance and repair of the closure assembly.

3,718,232
FILE TRAY CONTROL PLATE SYSTEM

George E. Moore, and Joseph D. Horlacher, both of Jamestown, N.Y., assignors to Watson Manufacturing Company, Inc., Jamestown, N.Y.

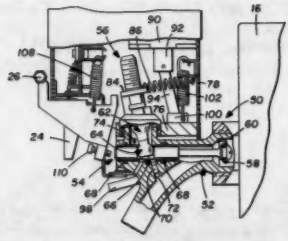
Filed April 6, 1971, Ser. No. 131,690
Int. Cl. B65d *57/00*
U.S. Cl. 220—22.3 7 Claims

A drawer or tray is disclosed for filing and referencing cards or checks or other records. In order to make the cards or other records conveniently available for filing and viewing, the tray includes an adjustable control plate arrangement whereby an infinitely adjustable viewing space or working Vee may be created where desired in the stored cards. The control plate arrangement includes control plates slidably mounted on a longitudinal rod in the tray bottom which provides a position lock for each plate to adjustably hold the plate in a particular viewing position within the drawer.

3,718,233
BEER DISPENSING SYSTEM

John J. Nordhoff, Plano, Tex., assignor to Magnetico International, Inc., Dallas, Tex.

Filed March 5, 1971, Ser. No. 121,427
Int. Cl. B67d *5/08*
U.S. Cl. 222—70 10 Claims

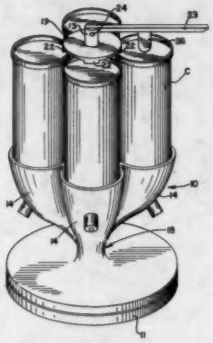


A beer dispensing system includes at least one tap for automatically dispensing either the exact quantity of beer necessary to fill a glass or the exact quantity of beer necessary to fill a pitcher, and a computer for recording each dispensing operation of the tap. The tap comprises a modified Perlick valve, a bell crank coupled to the actuating lever of the valve, and a solenoid for operating the bell crank to open the valve. Electronic timing circuitry is provided for energizing the solenoid for predetermined periods of time and thereby dispensing the desired quantities of beer. The tap further comprises an add-a-head lever for manual actuation to open the valve a slight amount and thereby dispense foam.

3,718,234
RACK FOR PRESSURIZED PRODUCT DISPENSING CONTAINER

Richard B. Bagguley, Dolton, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed April 23, 1971, Ser. No. 136,947
Int. Cl. B65d *83/14*
U.S. Cl. 222—135 6 Claims

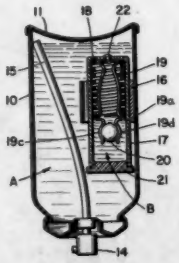


Racks for supporting pressurized product dispensing containers. The racks include means for tilting the dispensing valve on the containers to a dispensing position upon relative axial movement of the rack and container.

3,718,235
SPRING TRIGGER ASSEMBLY FOR MIXING DUAL LIQUIDS

Philip J. Cronan, 1933 S. Bedford, Los Angeles, Calif. 90035

Filed Dec. 13, 1971, Ser. No. 207,369
Int. Cl. B67d *5/60*
U.S. Cl. 222—145 5 Claims

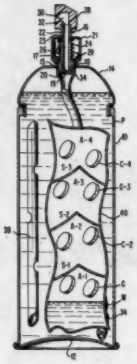


A spring trigger assembly is provided for placing, first and second liquids in first and second containers normally separated, into communication with each other for mixing. The assembly itself is included in the second container and comprises a coiled compression spring, a spring trigger means, and an inertia means cooperating with the spring trigger means to hold the compression spring in a compressed state and, when shaken loose from the spring trigger means, to release the compression spring so that it can expand to thereby open the second container and provide communication between the liquids.

3,718,236
PRESSURIZED CONTAINER WITH NON-RIGID FOLLOWER

Ellis M. Reyner, New Brunswick, N.J., and Margaret E. Reyner, 1050 George St., New Brunswick, N.J. 08901; said Ellis M. Reyner assignor to said Margaret E. Reyner

Filed Dec. 4, 1969, Ser. No. 882,034
Int. Cl. B67d 5/42
U.S. Cl. 222—386.5 **30 Claims**



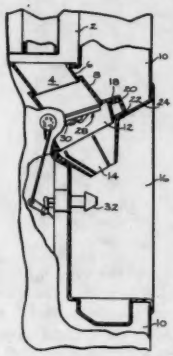
In a container for a flowable product which is dispensed through an outlet in the container controlled by a valve or closure, a plurality of expansible chambers or compartments serially arranged and separated from each other by disruptable partitions. One compartment has a pressure generating agent which, through the addition of a delaying agent, begins to generate pressure in the compartment after the container is assembled and charged with the product to be dispensed. The generated pressure causes the compartment to expand and force the product out of the container through the outlet of the container, when the valve of the container is opened. Expansion of the compartment also disrupts the associated partition to place the adjacent compartment in communication with the first compartment. Chemical reagent in the second compartment reacts with or is activated by the pressure generating substance in the first compartment to further generate gas causing continued expansion of the compartments for dispensing the product under pressure. This expansion of the compartment in turn disrupts a second partition to communicate a third compartment to activate a chemical reagent in the third compartment to further generate gas and pressure for dispensing the product in the same manner. Other features and embodiments of the invention will appear subsequently in the specification and drawings.

3,718,237
CLOSURE MEANS FOR THROUGH-THE-DOOR ICE SERVICE FOR HOUSEHOLD REFRIGERATORS

Joel A. Gittelson and Howard D. F. True, Jr., Fern Creek, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 15, 1971, Ser. No. 208,371
Int. Cl. B67d 3/00
U.S. Cl. 222—505 **6 Claims**

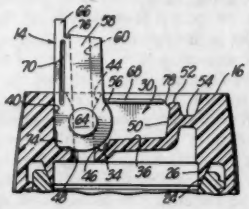
Through-the-door ice services employed in household refrigerators include a slanting ice conveying passageway having an inlet adapted to receive ice from a freezing unit and an outlet in a service area outside the door. Since the inlet to the passageway is exposed to freezing temperatures, whereas the passageway outlet is exposed to ambient temperatures, satisfactory operation of dispensers of this type depend to a great extent on the proper operation of the passageway closure member. The closure member provided herein effectively seals the passageway, and it can be removed and disassembled into its component parts without interfering with the operation of its drive mechanism.



3,718,238
SAFETY DISPENSING CLOSURE

Robert E. Hazard, North Kingstown, and Woodrow S. Wilson, Slatersville, both of R.I., assignors to Polytop Corporation, Slatersville, R.I.

Filed July 27, 1970, Ser. No. 58,355
Int. Cl. B67d 3/00
U.S. Cl. 222—536 **4 Claims**

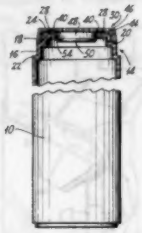


A "safety" dispensing closure of the rotatable spout type can be constructed utilizing a closure top and spout structure such that the spout is recessed within the closure in a closed position and utilizing a recess structure within the top for use in engaging the spout so as to rotate it to an open position and utilizing a plurality of coacting detent means which lock the spout in a closed position against accidental or unadvertent movement.

3,718,239
DISPENSER WITH TURN CAP

Raymond J. Cochran, Fairfield, Conn., assignor to Fairfield Plastics Incorporated, Fairfield, Conn.

Filed Feb. 23, 1971, Ser. No. 118,136
Int. Cl. B65c 47/00
U.S. Cl. 222—548 3 Claims



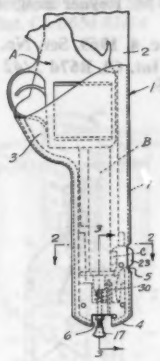
A small dispenser of the type intended to be held in the hand, for discharging various substances such as powdered talc or other fine particulate material, granulated substances and the like, as well as certain viscous substances. The dispenser comprises a plastic container or small jar having a transverse top wall provided with a large central opening and with a plurality of discharge openings (or a single opening) disposed radially outward of the central opening. Turnably mounted on and engaged with the transverse top wall is a captive cap having similar dispensing openings (or single opening) adapted to be registered with the corresponding openings or opening of the transverse container wall when the cap is properly rotatably positioned. The cap has a centralized depending bearing and retainer skirt which is adapted to fit into the large central opening of the transverse wall of the container, said skirt having a detent bead or shoulder means around its bottom rim. One of the parts, preferably the cap, is of resilient or yieldable plastic substance, whereas the other is preferably of a more rigid plastic composition, the arrangement being such that the cap can be press or snap fitted to the container by forcing the depending skirt thereof with its detent bead into and through the large central opening of the transverse container wall at the top. To facilitate such snap type assemblage, the central opening of the transverse wall is made tapered or with sloping edges which tend to cam inwardly the detent bead of the depending skirt of the cap, as the latter is forced downward onto the container, whereby the detent bead is radially compressed or reduced in size and forced completely past the bottom edge of the large wall opening. Upon this occurring, the detent bead radially expands to its original shape, whereby it effectively locks the cap to the container top while permitting the cap to be turned with respect thereto. At the underside of the cap there is a stop lug which is received in a movement-limiting slot of the transverse wall, the slot being so arranged that for one stopped or limited position of the cap the discharge openings thereof are out of registration with those of the top wall of the container. For the other limiting position, the discharge openings of both parts are in registration, enabling dispensing of the contents of the container to be effected. The assemblage of the cap to the container is very quickly and economically effected, without requiring separate fastenings of any kind, or additional operations to be performed on either the container or the cap.

3,718,240
HOLSTER WITH PISTOL RETAINING MECHANISM

Phillip C. Rose, 210 Dewey St., Morgantown, W. Va.

Filed Oct. 28, 1971, Ser. No. 193,497
Int. Cl. F41c 33/02
U.S. Cl. 224—2 B 6 Claims

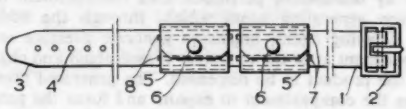
A pistol holster has a mechanism therein for retaining a pistol inserted in the holster by engaging the pistol sight and which mechanism will release the pistol upon a slight downward movement of the pistol barrel or a manual downward movement of a muzzle rest retaining screw extending from the holster.



3,718,241
SAFETY BELT

John D. Forsythe, 1543 Dougall Avenue, Windsor 12, Ontario, Canada

Filed Dec. 28, 1970, Ser. No. 101,855
Int. Cl. A45f 5/02
U.S. Cl. 224—5 A 1 Claim



This invention consists of a safety belt, made of a non-conductive material, to which are attached two or more loops for holding the electric cord of a power tool when in use. The loops can be opened and closed by snap fasteners, for the rapid insertion and removal of the said cord, and when the belt is worn in the usual manner around the waist of the person using the power tool, the loops are located in the back of the person thus always keeping the electric cord out of the way of the user.

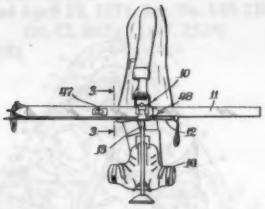
3,718,242
SKI CARRIER

Ronald H. Larson, Route 4, Box 340 C, Antioch, Ill.

Filed June 4, 1970, Ser. No. 43,415
Int. Cl. A45f 5/10
U.S. Cl. 224—45 S 2 Claims

A ski carrier adapted to carry, in addition to a pair of skis, a ski boot carrier and a pair of ski poles. The carrier has a U-shaped frame which functions as a bail-type handle, from which a pair of panels are hung, each panel having a resilient strap by which a ski, or a ski and a ski pole, are secured to the panel. The panels, when not in use, swing into or adjacent the frame to form a small pocket-size package. A hook depending from one of the panels serves to support a ski-boot carrier, a clasp on the frame can be used to support the frame from the skier's belt to free one of his hands, and means are provided

for hanging the ski carrier with skis secured thereto, from a wall hook. The carrier may be retained on the skis when the



skis are secured to a ski rack on a car in either co-planar or parallel relationship to one another.

3,718,243

APPARATUS FOR STORING TYPING COMMANDS GIVEN IN TOO RAPID SUCCESSION BY KEYS

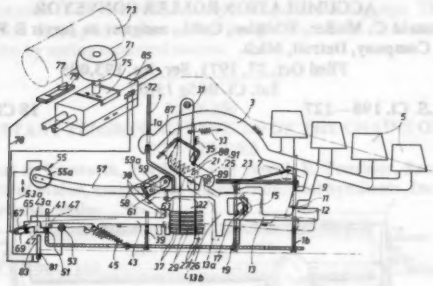
Kurt Chvatlinsky, Wilhelmshaven, Germany, assignor to Olympia Werke AG., Wilhelmshaven, Germany

Filed Nov. 10, 1971, Ser. No. 197,322

Claims priority, application Germany, Nov. 13, 1970, P 20 55 838.7

Int. Cl. B41j *23/02*

U.S. Cl. 197—16 **17 Claims**



Code bars having first and second opposite edges with coded projections, are located between spring-biassed interposers and storing slides. When a key releases a selected first interposer, it engages corresponding first code projections of corresponding code bars and displaces the same so that storing members are displaced in accordance with the second coded projections. A typing operation is carried out under the control of the storing members, while the first selected interposer is driven back to its position of rest, and out of the locking means, so that a second selected interposer, whose key was operated during the printing operation, and which was blocked in a waiting position by the locking means, can enter the locking means and cause another printing operation.

3,718,244

APPARATUS FOR READING PRE-PROGRAMMED CARDS AND PRINTING THEREON

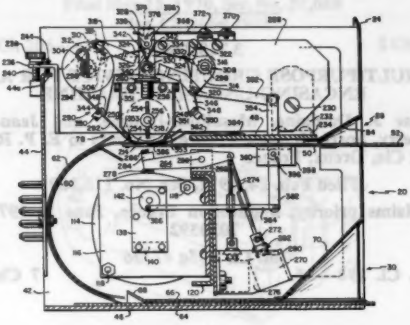
Raymond J. Bukowski, Chicago, and Raymond L. Brija, Villa Park, Ill., and Florian F. Yanikoski, Braintree, Mass., assignors to Motiongraph, Inc., Chicago, Ill.

Filed Feb. 26, 1970, Ser. No. 14,608

Int. Cl. B41j *13/00*

U.S. Cl. 197—127 **24 Claims**

Apparatus for transporting, reading and printing a sales order card having index registration indicia thereon, a program area having order data selectively disposed thereon, and a printing area to receive printed indicia thereon, including card guide means adapted to selectively transport a card through the apparatus, a scanning head



adapted to detect the position of the card and produce output signals responsive to order data on the card, and printing means responsive to signals from the scanning head to selectively print indicia on the printing area of the card.

3,718,245

SHEET INSERTING APPARATUS FOR A TYPEWRITER

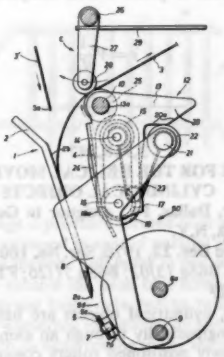
Wolfgang Priebel, Aistaig, and Arthur Frobel, Oberndorf, Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany

Filed Dec. 21, 1970, Ser. No. 99,770

Claims priority, application Germany, Dec. 22, 1969, P 19 64 141.9

Int. Cl. B41j *13/00*

U.S. Cl. 197—127 **10 Claims**



A sheet inserting apparatus is attached to a typewriter and has holding means movable between an open end posi-

tion, in which a sheet can be inserted, and a closed end position in which the sheet is pressed against the platen of the typewriter. Transporting means are connected with the holder means for movement in timed relation, and drive the inserted sheet in an intermediate position of the holder means, to a correct position for being typed upon, before the sheet is clamped against the platen.

3,718,246

MULTIPURPOSE GROUPING DEVICE FOR AN ENCASING-UNCASING MACHINE

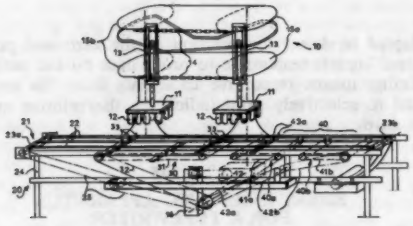
Edgar J. Dardaine, Mesnil-sur-l'Estree, and Jean-Luc Berry, Sorel-Moussel, France, assignors to E. P. Remy & Cie, Dreux, France

Filed Feb. 24, 1971, Ser. No. 118,380

Claims priority, application France, June 3, 1970, 7020392

Int. Cl. B65g *47/26*

U.S. Cl. 198—34 **7 Claims**



Device for grouping bottles to be gripped by gripping heads comprising a conveyor travelling at a constant speed higher than that of the heads, a guiding device provided with retaining members arranged equidistantly with a pitch L equal to that of the gripping heads and adapted to move at a speed V equal to that of the gripping heads and selecting means arranged upstream of the said guiding device and provided with retaining members arranged equidistantly with a pitch *l* and adapted to move at a speed

$$v = V\frac{l}{L}$$

3,718,247

MACHINE FOR THE HELICAL MOVEMENT OF CYLINDRICAL OBJECTS

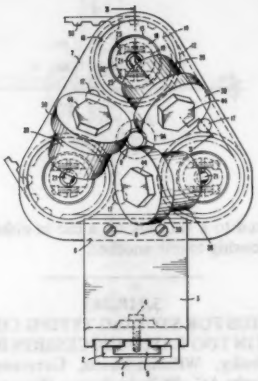
Hans C. Dreher, Dallas, Pa., assignor to General Cigar Co., Inc., New York, N.Y.

Filed Dec. 22, 1970, Ser. No. 100,578

Int. Cl. B65g *13/02*; B65h *51/26*; F16c *1/02*

U.S. Cl. 198—127 **9 Claims**

In a machine, cylindrical objects are helically moved by passing them longitudinally through an elongated guide to a set of three skewly positioned rollers connected by flexible shafts to sprockets which have their axes parallel to and equally spaced around the axis of the cylindrical objects in the elongated guide and are driven from a common source of power so that all the rollers rotate at the same rotational speed in the same rotational direction. The cylindrical surface of each object in the series passing through the guide is contacted by the three rotating rollers to impart both rotational and translational motion to each cylindrical object. The machine is particularly useful in helically wrapping cigar bunches with a ribbon of tobacco sheet.



3,718,248

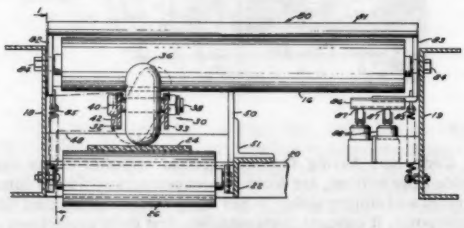
ACCUMULATION ROLLER CONVEYOR

Donald C. Muller, Whittier, Calif., assignor to Jervis B Webb Company, Detroit, Mich.

Filed Oct. 27, 1971, Ser. No. 193,095

Int. Cl. B65g *13/02*

U.S. Cl. 198—127 **18 Claims**



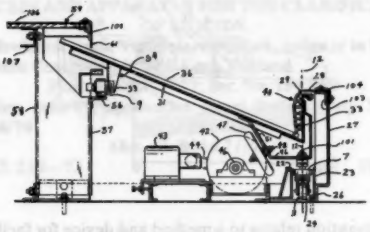
A conveyor having article carrying rollers arranged in successive groups and an endless driving belt moving below the rollers. Each roller group is independently driven by a drive transmitting unit consisting of one or more driving wheels carried by a frame mounted on a pivotal axis extending longitudinally of the driving belt. Each drive transmitting unit is movable between a driving position in which each driving wheel thereof is rotated by the moving belt and imparts rotation to a pair of adjacent article carrying rollers peripherally engaged by the the driving wheel; and, a non-driving position in which each driving wheel loses engagement with the carrying rollers and a braking force is applied thereto. Electrical or mechanical arrangements control the positions of the drive transmitting units enabling articles to be stopped and accumulated on the groups of rollers and to resume conveying movement in succession, and the direction of article movement is reversible.

3,718,249

CAROUSEL FOR BAGGAGE AND OTHER ARTICLES

Gildard H. Hess, San Leandro, Calif., assignor to Stanray Corporation, Chicago, Ill.

Filed April 12, 1971, Ser. No. 133,220
Int. Cl. B65g 15/00, 23/00
U.S. Cl. 198—181 3 Claims



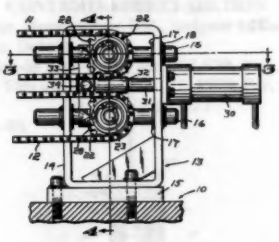
A conveyor of the carousel type for baggage and other articles consisting of a continuous chain having elongated links supported on self aligning caster wheels the chain assuming a pre-designed shape by means of guide wheels mounted on the links in contact with guide rails. Drive means operably engaging and propelling the chain the pallets carrying an endless rubber bumper at the lower end of the pallets to provide a continuous circumferential bumper stop for the luggage. The stainless steel plates carried by the pallets being connected thereto by spring mounted means.

3,718,250

CONSTANT TENSIONING DEVICE FOR THE CHAINS OF CONVEYORS

Delbert B. Bosworth, Portland, and Joseph R. Fournier, Saco, both of Maine, assignors to United Industrial Syndicate, Inc., Portland, Maine

Filed April 29, 1971, Ser. No. 138,504
Int. Cl. B65g 15/30
U.S. Cl. 198—208 9 Claims



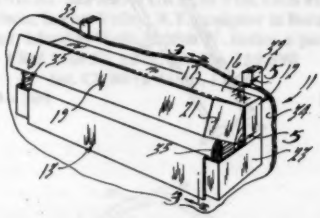
A device is disclosed for tensioning a pair of vertically spaced conveyor chains. The device has upper and lower pairs of laterally spaced guide rods and sprocket shafts, one for each pair of guide rods and having transverse bores through which they extend. A chain supporting sprocket is rotatably mounted on each shaft. Each shaft also has a block mounted thereon between the guide rods. Each device also includes a fluid pressure operated unit of the piston-cylinder type with its stem pivotally connected to the middle of a pressure applying member whose extremities are in engagement with the block. With a predetermined fluid pressure delivered to the unit, either one or both of the sprockets is urged in a chain-tightening direction.

3,718,251

BAG DISPENSER

Karl F. Barnett, Bloomfield Hills, Mich., assignor to Cadillac Products, Inc., Warren, Mich.

Filed May 15, 1970, Ser. No. 37,665
Int. Cl. B65d 79/00
U.S. Cl. 206—47 R 2 Claims



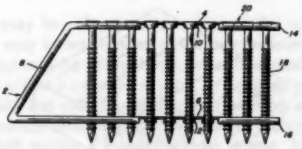
A combined package and dispenser for rolled goods such as plastic bags. A roll of goods is enclosed within a container and the container has die cut openings on one face to pass the heads of nails driven into a wall for supporting the container upon the wall. The bags or other goods may be drawn through an opening in the container. A pair of combined end plates and roll supports are positioned in the container at opposite ends of the roll. These end plates reinforce the ends of the container, rotatably support the roll and determine a fixed axis of rotation for the roll.

3,718,252

PACKAGE OF SCREWS

Gerald M. Roeder, Pittsburgh, Pa., assignor to United States Steel Corporation

Filed Dec. 16, 1971, Ser. No. 208,789
Int. Cl. B65d 73/02
U.S. Cl. 206—56 DF 5 Claims



A screw package is provided formed of at least two stiff friable membranes arranged in spaced parallel relation each having aligned holes therein. The holes in one of the membranes being shaped to receive the head of a screw and the holes in the other membrane being adapted to receive the tip of a screw. A screw is inserted longitudinally through each pair of aligned holes with its head resting in the shaped hole of one of the membranes and its tip projecting through the other membrane. The heads of the screws are secured in position by a fluid bonding agent which is applied in the fluid state and then hardened. The membranes are sufficiently friable to permit the screws to be singly removed from the membranes as the screw is driven to apply it by the rotating motion of a driving means, such as a screwdriver.

3,718,253

BAG PACKAGE AND METHOD

Jesse J. Smith, Garden City, Kans., assignor to Packaging Products & Design Corp.

Filed Jan. 8, 1971, Ser. No. 104,861
Int. Cl. B65d 85/62
U.S. Cl. 206—57 A 7 Claims

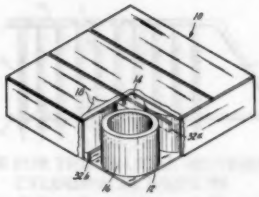
A bag package and method for packaging plastic bags wherein a plurality of generally tubular bags are disposed in a flat side-to-side stack and the plurality of bags is then folded intermediate the ends of the bags; then the folded stack is rolled into a spiral shaped roll with the folded portions of the bags disposed in spiral form at one end of the roll; then the roll is placed in a container which loosely holds the roll with the said folded portions communicating with an open end of said container, whereby one bag at a time may be dispensed from the container by slidably pulling the folded area of one of said bags from the spiral shaped stack of bags in the container.

3,718,254

PACKAGE FOR TRANSPORTING AND STORING LINERS FOR FOUNDRY RISERS

Herman P. Stephenson, Greendale, Wis., assignor to Thiem Corporation, Milwaukee, Wis.

Filed March 8, 1971, Ser. No. 121,937
Int. Cl. B65d 71/00
U.S. Cl. 206—65 S 10 Claims



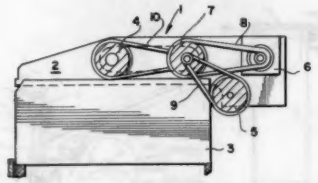
A package including a base formed from a corrugated sheet having end walls at each end and dividers at equally spaced intervals intermediate the end walls for separating rows of riser liners from each other, a cover formed from a corrugated sheet having end walls at each end and dividers at equally spaced intervals intermediate the end walls for separating rows of riser liners from each other, the cover being mounted on the riser liners transverse to the base to isolate each riser liner from each other, and a thin film of heat shrinkable material completely enclosing said cover and base and being heat shrunk into tight engagement with the cover and base to hold the liners in fixed position in the package.

3,718,255

BRUSH FOR ASSISTING IN SEPARATION OF SHEETS

John H. Lanahan, Whitesboro, and William W. Abraham, Utica, both of N.Y., assignors to Mohawk Industrial Laboratories, Inc., Vernon, N.Y.

Continuation-in-part of Ser. No. 811,826, April 1, 1969, Pat. No. 3,586,166. This application Nov. 17, 1970, Ser. No. 90,356
Int. Cl. B07c
U.S. Cl. 209—80.5 10 Claims



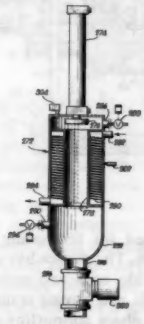
The invention relates to a method and device for facilitating the separation from a plurality of edge-aligned parallel cards, such as edge-notched cards, those cards which are to be removed therefrom. To facilitate separation of cards from a group from which they are removable, a cylindrical brush is rotated in contact with aligned edges of a plurality of cards which support one another in substantially vertical orientation. A suitable brush comprises an arbor having at least one cylindrical segment which includes one or more brush elements. A card separating device includes means to move from a plurality of edge-aligned cards certain "selected" cards from the remaining, "rejected," cards thus effecting a separation of selected cards. The brush according to the present invention facilitates this separating motion. The brush bristles contact all of the edge-aligned cards and are sufficiently resilient to deflect on contacting a stationary card and sufficiently stiff to enter into the space between adjacent cards to facilitate card separation.

3,718,256

PARTICLE SEPARATOR AND METHOD

Arthur S. King, 1710 Baltimore, Prairie Village, Kans.

Division of Ser. No. 727,835, May 9, 1968, Pat. No. 3,585,122, which is a continuation-in-part of Ser. No. 613,616, Feb. 2, 1967, abandoned. This application Dec. 21, 1970, Ser. No. 100,221
Int. Cl. B01d 43/00
U.S. Cl. 210—71 7 Claims



Particles are removed from fluids, such as water, previously subjected to electrostatic fields. When subjected to an initial electrostatic treatment, the fluid undergoes a reduction in surface tension and neutralization of charged, dissolved particles therein. Subsequent field treatments effect nucleation or

coagulation of dissolved impurities and break molecule clusters to aid the nucleation or coagulation action. Suspended and nucleated or coagulated matter is removed from the fluid after the electric field treatments by discharging the fluid against an electrically conductive surface at ground potential maintained at a temperature different from that of the fluid. This causes the suspended and nucleated or coagulated matter to be deposited from the fluid and thus readily permits separation and removal.

3,718,257

PROCESS AND APPARATUS FOR THE CLARIFICATION OF LIQUIDS

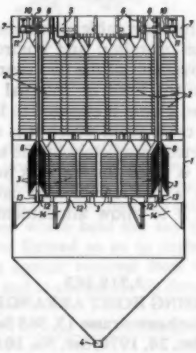
Niels Breinholt Bach, Vestervig, Denmark, assignor to Mirrless Watson Company Limited, Kent, England

Filed June 21, 1971, Ser. No. 154,750

Claims priority, application Great Britain, July 1, 1970, 31,810/70

Int. Cl. B01d *21/04*

U.S. Cl. 210—73 **10 Claims**



The invention relates to a modified POLY-CELL or "cone tree" clarifyer in which a second series of cone trees is disposed below the normal series to reduce the liquids content of the sludge removed from the sludge zone of the clarifier.

3,718,258

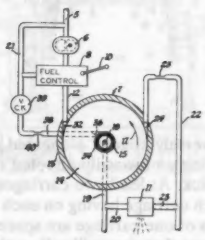
CONTAMINANT SEPARATION

Cecil H. Sharpe, Brownsburg, Ind., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 752,820, Aug. 15, 1968, abandoned. This application Oct. 21, 1970, Ser. No. 82,574

Int. Cl. B01d *35/22*

U.S. Cl. 210—98 **8 Claims**



A fuel system for a gas turbine engine adapted to handle dirty fuel includes a separating device of a centrifuge-filter type through which fuel is supplied from a fuel pump to combustion apparatus. The centrifuge-filter has a swirl chamber with a tangential inlet, a central annular screen, and outlets both outside and inside of the screen. It discharges a large portion of the fuel substantially clean and a small portion bearing the dirt. The clean fuel flow to small diameter ports of fuel nozzles and, at higher fuel flow rates, through a resistance valve or valves to large area ports of the fuel nozzles. The dirty fuel flows to the large flow ports of the nozzles, by-passing the fuel control. An outlet line from adjacent the outer surface of the screen acts to clean the screen by discharging the finer dirt which tends to accumulate at low flow rates. The separating devices may be arranged in tandem.

3,718,259

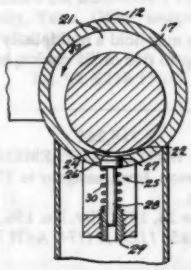
MECHANICAL SEPARATOR FOR VISCOUS FLUIDS

Henry Harrison, Locust Valley, N.Y., assignor to Bernd Kalski, Gingerland, Island of Nevis, British W. Indies, a part interest

Filed June 22, 1971, Ser. No. 155,598

Int. Cl. B01d *43/00, 17/00*

U.S. Cl. 210—109 **13 Claims**



A device for separating fluids of disparate viscosities includes a main flow passage for the fluids defined between a pair of opposed surfaces, a reduced portion defined by said surface for constricting flow in a direction transverse to the main flow passage, a pump for forcing the fluids through said main flow passage, a motor for producing relative movement between said surfaces transverse to the direction of the main flow passage and at least one valve disposed adjacent said reduced portion and spring biased into the closed portion until the pressure in this area, which is proportional to the viscosity of the fluid passing through the area, reaches a predetermined value.

There may be several valves adjacent the reduced portion and they may be set to open at various pressures. In addition, the passage may be defined by a cylindrical shaft eccentrically mounted within a cylindrical tube, by a pair of generally parallel opposed flat plates with a ridge raised on one plate, by a non-cylindrical shaft within a cylindrical tubing or by a cylindrical shaft within a noncylindrical tubing. More than one reduced portion may be produced by any but the first set of elements.

3,718,260

DISPLAY DEVICE

Sandra Sharp, 333 West End Avenue, New York, N.Y.

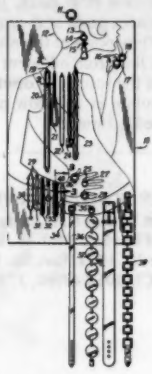
Filed Jan. 29, 1971, Ser. No. 110,913

Int. Cl. A47f *7/00*

U.S. Cl. 211—13 **1 Claim**

A display device particularly suitable for holding and retaining personal articles of clothing and jewelry. The display device permits the easy selection of these articles while a person is dressing. The device consists of a silhouette or board or flat surface having an image of a part of an animal figure, such as a human figure, and includes a plurality of article removing

holders, such as hooks, pegs and the like, located preferably at the ear, hand, neck, wrist and waist of the figure so as to receive personal articles customarily worn on these portions



of the body. Each peg may hold a multiplicity of articles, such as several earrings, up to five or six chains, bracelets and the like.

3,718,261

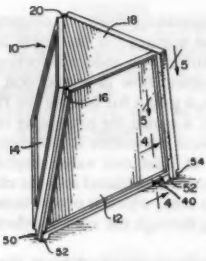
SELF-LOCKING WRITING IMPLEMENT HOLDER

Cecil B. Woofter, Newton, Iowa, assignor to The Vernon Company, Newton, Iowa

Filed June 24, 1971, Ser. No. 156,195

Int. Cl. A45c *11/36, 11/34*; A47f *7/03*

U.S. Cl. 211—69.1 **5 Claims**



A plastic, integrally formed writing implement holder comprising a triangular base plate and three trapezoidal side panels joined together along hinge lines. Aligning tabs are formed on opposite sides of the base plate adjacent to its apex, and locking tabs are formed along the free vertical edge of one of the side panels. The aligning tabs are inserted into horizontally extending slots adjacent the lower edge of two of the side panels and then the locking tabs are inserted into vertically extending slots adjacent to the free edge of one of the side panels. Camming surfaces on the locking tabs momentarily deform at least one of the side panels when the implement holder is snapped together. The inherent resiliency of the holder causes it to return to its unstressed condition and enhances the locking action. The erected support is triangular in shape, when viewed in horizontal cross section, and the interior face of the base plate has shallow compartments formed therein to assist in retaining writing implements in an upright position. When viewed in front, rear or side elevation, the holder assumes the shape of a foreshortened pyramid.

3,718,262

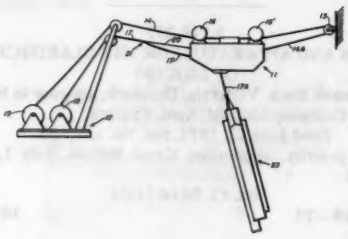
TWO CABLE TENSION-CONTROLLED CARRIAGE

Hilton H. Lysons, Seattle, and Charles N. Mann, Snohomish, Wash., assignors to the United States of America as represented by the Secretary of Agriculture

Filed Feb. 24, 1971, Ser. No. 118,343

Int. Cl. B66c *21/00*

U.S. Cl. 212—110 **3 Claims**



A carriage for moving cable traversing hoist application with complete operation and control derived from the tension and movement of the two running cables without additional control lines or internal power sources. A tension-controlled clamp is engaged to hold the carriage in position on the cable from which it is suspended. With the carriage supported completely by the suspension cable, one running cable is freed for use as a hoist. A device in the carriage pulls a portion of this cable through the carriage, lowering it to allow attachment or removal of the load.

3,718,263

TRAVERSING HOIST ARRANGEMENT

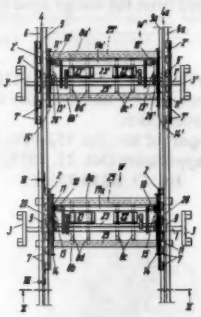
Heinz Strecke, Lindenbaumstrasse 13, 565 Solingen, Germany

Filed Dec. 24, 1970, Ser. No. 101,369

Claims priority, application Germany, Dec. 30, 1969, P 19 65 450.3; June 15, 1970, P 20 29 454.6

Int. Cl. B61b *3/02*; B66c *19/00*; E01b *25/22*

U.S. Cl. 212—128 **16 Claims**



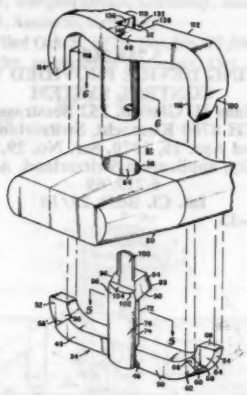
A pair of transversely spaced elongated parallel rails are provided each having an inwardly directed track and an outwardly directed track. At least two carriages are mounted on these rails with each carriage having on each side two or more wheels. The wheels of one carriage are spaced apart transversely to such an extent that they will roll on the inner tracks of the rails, and the wheels of the other carriage are spaced apart transversely to a greater extent so as to roll on the outer tracks of the rails, with the arrangement being such that the carriages can pass one another on the rails.

3,718,264

RETAINER FOR DRAFT KEY OF RAILWAY CAR LIKE COUPLING

William A. Norman, Jr., 1705 River Shores Drive, Knoxville, Tenn.

Filed Oct. 26, 1971, Ser. No. 191,999
Int. Cl. B61g 7/14, 9/00
U.S. Cl. 213—50.5 10 Claims



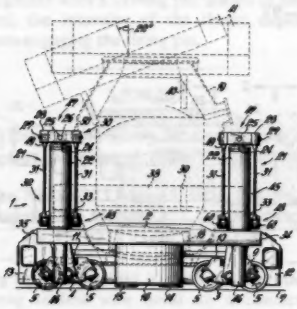
A retainer for preventing inadvertent withdrawal of the draft key from its position in the coupling of a railway car or the like. The retainer includes two separable yokes which when mated one with the other define a pin means and a wear and bearing surface which hold the key against withdrawal. The two yokes are formed so as to mutually interlock and secure themselves against removal from their position with respect to the key and to cooperatively develop the features of the retainer.

3,718,265

LIFT TRUCK FOR HOT VESSELS, PARTICULARLY FOR STEEL-MILL CONVERTERS

Werner Trost, Duisburg, Germany, assignor to Demag Aktiengesellschaft, Duisburg, Germany

Filed Jan. 21, 1971, Ser. No. 108,468
Claims priority, application Germany, Feb. 24, 1970, P 20 08 396.9
Int. Cl. B65g 7/00
U.S. Cl. 214—1 D 10 Claims



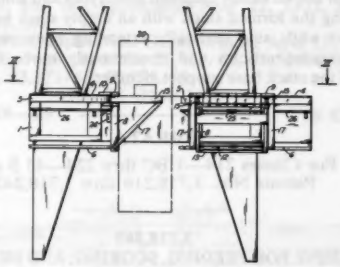
The lift truck has an undercarriage with driving means for moving the truck along tracks and carrying hydraulic actuators operable to lift the undercarriage at track intersections to change the direction of movement of the truck. Two pairs of piston-cylinder hydraulic actuators are mounted on the undercarriage and each actuator includes a cylinder supported on the undercarriage to extend vertically upwardly therefrom and a piston movable upwardly in the associated cylinder and carrying an enlarged piston head. Pairs of tie rods are supported on each piston head through universal or gimbal type Cardan joints for universal swinging movement, and the lower ends of the tie rods are also provided with the same general type of joints. The tie rods associated with each pair of actuators support a respective stirrup so that, when the pistons are extended, the associated stirrups are lifted. These stirrups engage beneath a reinforcing ring or the like on a hot vessel, such as a steel-mill converter, and are operable to lift the vessel upwardly to engage the vessel in a tilting cradle or support in which the vessel is then locked. The gimbal or Cardan type connections of the tie rods to the piston heads and to the stirrups provide for adjustment of the tie rods and stirrups to the orientation assumed by the converter when the latter is being inserted into a tilting support.

3,718,266

OIL WELL DERRICK SUBSTRUCTURE WITH CARRIAGES FOR BLOWOUT PREVENTERS

Robert B. Donnally, Tulsa, Okla., assignor to Lee C. Moore Corporation, Tulsa, Okla.

Filed April 15, 1971, Ser. No. 134,128
Int. Cl. E21b 33/06
U.S. Cl. 214—2.5 7 Claims



The framework of an oil well derrick substructure has a slot extending from one side inwardly past the well center line, with track means secured to the framework and extending along at least one side of the slot from its inner end to its outer end and then laterally along the adjoining side of the framework. Supported by the track means is a carriage that extends outwardly for supporting a blowout preventer stack. The carriage can be moved along the track means back and forth between a position at the inner end of the slot to a position outside of the slot beside the outside of the framework, whereby a blowout preventer stack can be moved from outside the framework to a position over the well and vice versa.

3,718,267

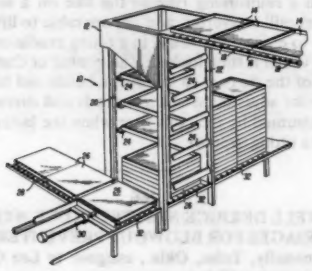
ARTICLE STACKING MACHINE

Adoniram C. Hiebert, 3007 Innerdale Court, Randallstown, Md., and Richard E. Lowry, 1823 Swansea Road, Baltimore, Md.

Continuation-in-part of Ser. No. 821,234, May 2, 1969, abandoned. This application March 16, 1971, Ser. No. 124,669
Int. Cl. B65g 57/14
U.S. Cl. 214—6 FA 8 Claims

An article stacking machine including a pair of continuously moving horizontally spaced vertically extending conveyors

having a plurality of hingedly mounted article supports, a feeding conveyor for moving articles one at a time to a position above the vertically disposed conveyors and therebetween, a pair of pivotally mounted plate members for receiving the articles one at a time from the feeding conveyor and lowering the articles one at a time onto the article support members of the vertically disposed conveyors, a supporting structure between the vertically disposed conveyors and at the



lower portion thereof for holding a stack base support member thereon during the stacking process, and an automatic pushing element for moving a formed stack from between the vertically disposed conveyors and simultaneously replacing the formed stack with an empty stack base support member while said vertically extending conveyors continuously receive articles and continuously move the articles toward the stack base support member.

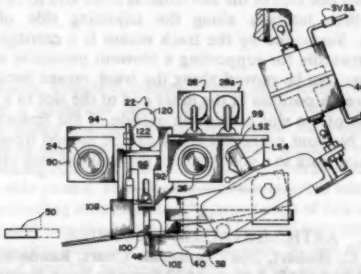
ERRATA

For Classes 214—1 BC thru 224—45 S see:
Patents Nos. 3,718,216 thru 3,718,242

3,718,268
MACHINE FOR FEEDING, SCORING, AND BREAKING SMALL DIAMETER GLASS TUBING

Thomas A. Insolio, Bristol, Conn., assignor to The Fletcher-Terry Company, Forestville, Conn.

Filed July 12, 1971, Ser. No. 161,724
Int. Cl. B26f *3/00*
U.S. Cl. 225—2 10 Claims

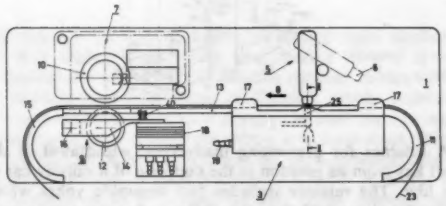


The tubing to be cut is placed on a flat bed, relatively long-lengths of tubing being arranged in side-by-side relationship so as to fill the entire width of the bed. Tube feeding means is provided above the bed to feed the tubing across an anvil at the downstream end of the bed and up against a measuring bar or stop. The stop is spaced a predetermined distance downstream of the anvil, being adjustable to permit cutting the tubing to the desired length. A scoring wheel and break-off shoe are provided in a carriage, which carriage traverses the bed over the anvil while the tube feeding means clamps the tubing. The feeding and clamping function are automatically provided for and control circuitry is utilized to control these functions as well as to successively complete a predetermined sequence of these feeding and scoring and clamping functions.

3,718,269
DRIVING DEVICE PROVIDED WITH CONTROL SYSTEM

Hans H. Glaettli, 252 Seestrasse, CH 8700 Kusnacht, Switzerland

Filed Apr. 16, 1970, Ser. No. 29,201
Claims priority, application Switzerland, Apr. 24, 1969, 6,219/69
Int. Cl. B65h *23/18*
U.S. Cl. 226—33 25 Claims

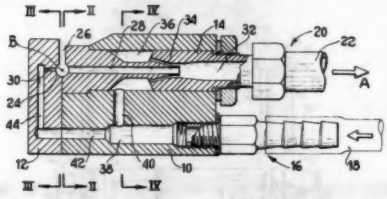


A driving device with a control system and designed for tape or disk stored information media utilizing a fluidic sensing means for controlling actuation means for engaging and/or disengaging the drive of the information medium.

3,718,270
DEVICES FOR PICKING-UP, SUCKING AND DRAGGING TEXTILE FILAMENTS AND YARNS

Paolo Parmeggiani; Domenico Nicita, and Bruno D'Alo', Milan, Italy, assignors to Snia Viscosa Societa'Nazionale Industria Applicazioni Viscosa, Milan, Italy

Filed Dec. 1, 1970, Ser. No. 93,972
Claims priority, application Italy, Dec. 4, 1969, 25357 A/69
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 2 Claims



A device for pneumatically sucking and dragging the cut ends of textile filaments and yarns traveling at high speeds includes a passage wherein filaments or yarns travel in front of a suction orifice and a related removal duct to which a subatmospheric pressure is imparted. On the other side of the passage and coaxial with the orifice a nozzle is provided to

form a superatmospheric pressure air stream incident to the filaments or yarns in cooperation with the suction orifice.

3,718,271

DRIVING DEVICE FOR DRIVING BOLTS OR OTHER DRIVEPINS INTO FIXED STRUCTURAL OR BUILDING ELEMENTS OR THE LIKE

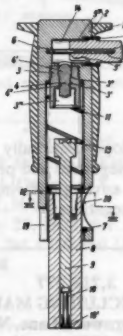
Fritz Schneider, Burgbernheim, Germany, assignor to Impex-Essen GmbH, Ansbach, Germany

Filed Oct. 5, 1970, Ser. No. 77,898

Claims priority, application Germany, Oct. 10, 1969, P 19 51 121.8

Int. Cl. B25c *1/14*

U.S. Cl. 227—10 **10 Claims**



A device for driving bolts or studs into structural elements comprises a tubular housing having a closed upper end and an open lower end. A socket fixed in the upper end of the housing includes a passage and a firing chamber communicating therewith. A firing pin axially slidable in the passage can be selectively projected by means of a rotatable pushbutton shank, interposed between the upper end of the housing and the socket, which has a plurality of circumferential recesses of different depths each arranged to engage the head of the firing pin to extend the lower end of that pin into the chamber. A barrel longitudinally movable in the housing against a spring force surrounds a piston carrying a cartridge which upon engagement by the firing pin, in response to a hammer blow upon the top of the housing, is detonated to thrust the piston outwardly together with a driving pin seated in the lower end of the barrel; the intensity of the thrust depends on the selected recess engaging the firing pin.

3,718,272

BONDING TIP

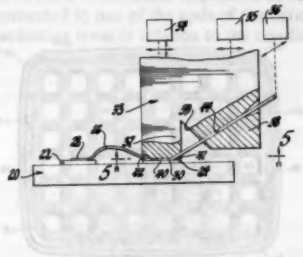
Richard E. Eltzroth, and Larry K. Fewell, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 36,323, May 11, 1970, Pat. No. 3,689,983. This application May 1, 1972, Ser. No. 249,399

Int. Cl. B23k *21/00*; B23p *3/02*

U.S. Cl. 228—3 **3 Claims**

A bonding tip and method is disclosed for making an extremely strong tailless wire bond on a contact pad of a semiconductor device without significantly reducing the connected unbonded wire cross-section immediately adjacent the bond. One form of the tool includes an elongated member having a flat bonding surface on one end and a pair of oppositely disposed grooves which intersect opposite edges of said bonding surface. The connected unbonded wire adjacent a final bond of an interconnection is aligned with one of the grooves and separated from the bonded portion while the tip is in pressing engagement therewith by pulling thereby removing



a preselected part of the bond under a groove producing a tailless bond.

3,718,273

KIT OF PARTS FOR USE IN JOINTING ELECTRIC CABLES

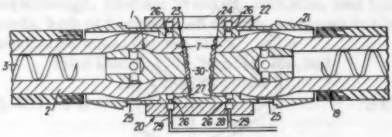
John Stephen Cleaver, Faversham, Peter Guilford, Erith, Frederick James Kimpton, Bexleyheath, Thomas John Page, Beckenham, and Norman Richard Steinberg, London, England, assignors to British Insulated Callender's Cable Limited, London, England

Original application Apr. 4, 1969, Ser. No. 813,523. Divided and this application May 22, 1972, Ser. No. 255,560

Claims priority, application Great Britain, Apr. 11, 1968, 17,484/68; June 10, 1968, 27,499/68, 27,500/68; Nov. 11, 1968, 53,371/68, 53,372/68

Int. Cl. B23k *1/20*

U.S. Cl. 228—15 **8 Claims**



A kit of parts for use in making a welded joint between hollow stranded conductors in oil-filled electric cables comprises a pair of mandrels and a ferrule. Each mandrel has a solid neck and a head having a diameter larger than that of the neck and there is a bore opening to the end of the head remote from the neck and at least one passage between the bore and the circumferential surface of the head. The ferrule has a central aperture for introduction of welding metal and, between that aperture and each end of the ferrule at least one outlet hole for the withdrawal of impregnant during welding.

3,718,274

HIGH STRENGTH OPEN BOTTOM PACKAGING TRAYS

Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Hunington, N.Y., assignors to Diamond International Corporation, New York, N.Y.

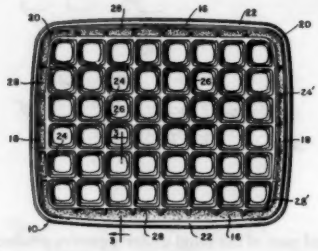
Continuation-in-part of Ser. No. 111,578, Feb. 1, 1971, abandoned. This application April 24, 1972, Ser. No. 246,600

Int. Cl. B65d *1/00, 65/00*

U.S. Cl. 229—2.5 **20 Claims**

A tray of molded pulp or the like is provided for the packaging of meat, poultry or fish in conjunction with an over-

wrapped transparent film. The tray bottom is formed of a plurality of inverted V or U-shaped ribs joining or intersecting in two directions and defining open windows therebetween, the height of each inverted V-shaped rib being on the order of



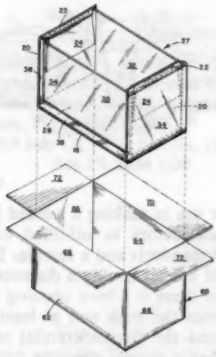
several times the thickness of the remainder of the tray, and the total volume of the inverted V-shaped ribs being approximately equal to the volume of a bottom of an imperforate bottom tray of the same size.

3,718,275

PROTECTIVE SHIPPING AND DISPLAY WRAPPER FOR AN AQUARIUM

Allan H. Willinger, New Rochelle, N.Y., assignor to Metaframe Corporation, Maywood, N.J.

Filed Sept. 28, 1971, Ser. No. 184,493
Int. Cl. B65d *5/58*
U.S. Cl. 229—14 C **12 Claims**



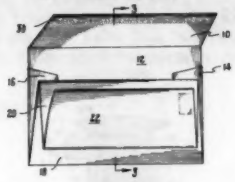
A protective shipping and display wrapper for an aquarium, the aquarium having a base, a front wall, a rear wall, and a pair of opposite side walls interconnected to define an enclosure open opposite the base. The protective wrapper comprises a blank, and a plurality of spaced parallel scored folding lines extending integrally in the blank for dividing the latter into a plurality of panels displaceable generally pivotally relative to one another into detachable embracing relation with both the base and the opposite side walls of the enclosure, yet leaving the front and rear walls of the enclosure exposed for observation. The blank includes a pair of opposite end flaps which may be pivotally inserted through the opening in the aquarium into press-fit association with the front and rear walls of the aquarium.

3,718,276

ENVELOPE

Don W. Vandergrift, Roanoke, and David E. Secrist, Troutville, both of Va., assignors to Double Envelope Corporation, Roanoke, Va.

Filed May 27, 1971, Ser. No. 147,513
Int. Cl. B65d *27/08*
U.S. Cl. 229—72 **3 Claims**



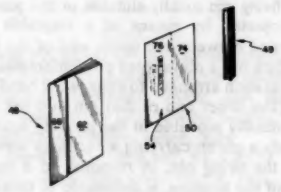
A combination envelope especially for use to deliver processed photographic negatives and prints from the processor to the customer, the envelope having a separable pocket for later use in filing the negatives.

3,718,277

PRINTED FOLDER INCLUDING MAILABLE ARTICLE

John K. Volkert, 545 Thornwood Lane, Northfield, Ill.

Filed Aug. 24, 1971, Ser. No. 174,321
Int. Cl. B65d *27/06*
U.S. Cl. 229—73 **11 Claims**



A folder for distributing printed material and a return envelope to a recipient is provided, the folder being formed in such a way that the return envelope becomes readily available when a portion of the folder, as formed, is removed, as by tearing or cutting.

3,718,278

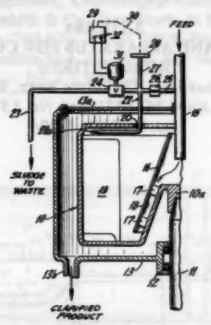
BASKET CENTRIFUGE WITH SELF-TRIGGERING SLUDGE DISCHARGE

John R. Conklin, Poughkeepsie, N.Y., assignor to The De Laval Separator Company, Poughkeepsie, N.Y.

Filed Jan. 22, 1971, Ser. No. 108,755
Int. Cl. B04b *11/00*
U.S. Cl. 233—19 A **3 Claims**

A stationary skimming tube has its inlet orifice located at substantially the maximum radius of the sludge-accumulating space in the centrifugal bowl of a basket centrifuge. A sludge discharge pipe leading from the skimming tube has a normally closed valve; and located upstream from this valve is a restricted passage for discharging skimmed material from the

tube. Means are provided for opening said valve in response to a pressure increase in the skimming tube resulting from sludge



entering the restricted passage from the inlet orifice of the tube.

3,718,279

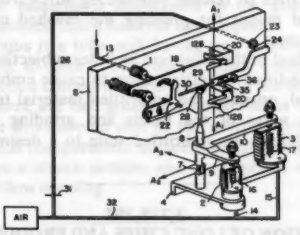
FORCE BALANCE INSTRUMENT FOR COMPUTING

Norman Roy Westfall, Ogden, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed May 28, 1971, Ser. No. 147,991

Int. Cl. G06d 1/12

U.S. Cl. 235—200 WB **12 Claims**



A mechanical computer wherein thrust of a first bellows is force-balanced by a deflectable lever against the thrust of a second bellows, and third bellows varies the moment arm of the thrust of the second bellows on the lever. This moment arm is prevented from becoming zero by providing an arm on said lever through which the thrust of the third bellows beings to provide a moment in the same sense as the moment of the thrust of the first bellows.

The moment of the thrust of the second bellows is applied to the first lever through a second lever at a point of the first lever determined by the thrust of the third bellows. As the second lever has to deflect in two different directions simultaneously, it is provided with a flexure pivot having a stiff elastic rod allowing universal flexing, and also may have a relatively limber elastic flat strip arrangement fixing the rod's center of flexing.

3,718,280

FLUID PRESSURE TRANSMITTER AND SYSTEM THEREFOR

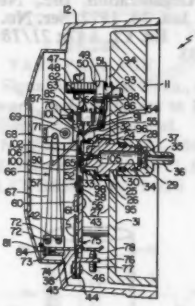
William J. Russell, Malvern, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed March 3, 1971, Ser. No. 120,549

Int. Cl. B01f 3/02

U.S. Cl. 236—44 R **30 Claims**

A fluid pressure transmitter having a flapper valve lever pivotally carried by a frame and having an end thereof for controlling a valve seat whereby the position of the end of the lever relative to the valve seat determines the degree of fluid flow through the valve seat. A first spring is carried by the frame and is operatively interconnected to the flapper lever to tend to move the end thereof in one direction relative to the valve seat. An actuating lever is pivotally carried by the frame and has opposed ends. A condition responsive device is operatively interconnected to one of the ends of the actuating lever to pivot the actuating lever in relation to the condition sensed



thereby and a second spring is interconnected to the other end of the actuating lever and to the end of the flapper lever to control movement of the end of the flapper lever relative to the valve seat in relation to pivoting movement of the actuating lever by the condition responsive device. A conduit means is utilized to convey the fluid flow from the valve seat to a position remote from the condition responsive device so that the condition responsive device will not be responsive to the characteristics of the fluid flow through the valve seat.

3,718,281

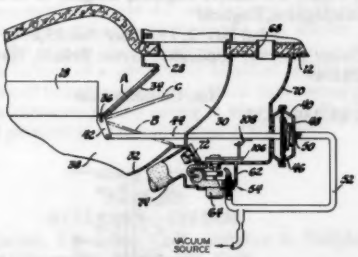
THERMOSTATIC VACUUM POSITIONER

Paul Beatenbough, Medina; Ward H. Hutchins, and Gary E. Richards, both of Lockport, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 9, 1971, Ser. No. 206,263

Int. Cl. F25b 29/00

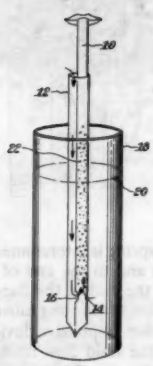
U.S. Cl. 237—2 A **3 Claims**



An automatic temperature control system for air conditioning the passenger compartment of an automobile utilizing a spirally wound bimetal to sense the temperature of air which is drawn through an opening in the dashboard and through an ambient temperature compensating heat exchanger. The center of the spiral bimetal is supported by a shaft while the peripheral end of the bimetal coacts with an air bleed valve assembly which is connected to a vacuum pressure source and a vacuum motor to position an air damper for producing desirable air temperatures in the passenger compartment. The air bleed valve is movable with respect to the bimetal in response to settings of a dash mounted control adapted to be manually

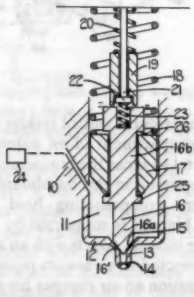
set for a temperature desired in the passenger compartment. A feedback mechanism which operates in correspondence to the position of the damper rotates the interconnected shaft and bimetal to re-establish a desirable spacial relationship between the end of the bimetal and the air bleed valve assembly after a setting change of the control assembly.

3,718,282
DRINKING STRAWS
Adrian Pizzoferrato, Bronx, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Jan. 20, 1972, Ser. No. 219,300
Int. Cl. A47g *21/18*
U.S. Cl. 239—33 **3 Claims**



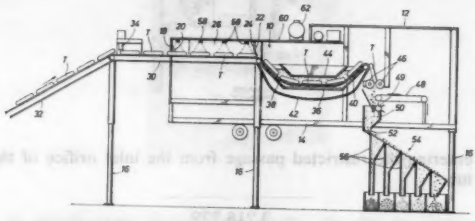
First and second drinking straws of different length and diameter are bonded together with the shorter straw being of larger diameter and the longer straw being disposed within the shorter straw. The straws have one set of aligned ends. A first relatively small opening extends through both straws in the bonded wall. The longer straw has an oppositely disposed large opening in its wall alone. Both openings are disposed adjacent the aligned ends.

3,718,283
FUEL INJECTION NOZZLE UNITS
Ivor Fenne, Greenford, England, assignor to C.A.V. Limited, Birmingham, England
Filed Nov. 2, 1970, Ser. No. 85,874
Claims priority, application Great Britain, Nov. 12, 1969, 55,391/69
Int. Cl. B05b *1/30*
U.S. Cl. 239—533 **2 Claims**



A fuel injection nozzle unit which includes a valve member slidable under the action of fuel under pressure to allow a restricted flow of fuel through an orifice, the valve member being lifted further by the action of a piston to allow substantially un-restricted flow of fuel through the orifice.

3,718,284
METHOD OF AND APPARATUS FOR COMMUNITING RUBBER TIRES
Vernon C. H. Richardson, 5312 Brae Burn, Bellaire, Tex.
Filed April 26, 1971, Ser. No. 137,167
Int. Cl. B02c *11/08*
U.S. Cl. 241—23 **7 Claims**

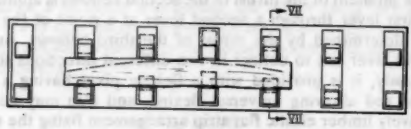


A method of and apparatus for reducing discarded automobile tires to a comminuted condition.

The apparatus comprises means for subjecting the tires in a whole condition to refrigeration to cause embrittlement of the material of the tires and including mechanism for crushing the embrittled tires to release reinforcing wires from the beads thereof and means for grinding the crushed material to a desired fineness.

The method of the invention includes subjecting the tires in a whole condition to refrigeration to cause embrittlement of the material, crushing the embrittled material to release the reinforcing wires of the beads and grinding the crushed material while in an embrittled state to a desired degree of fineness.

3,718,285
PRODUCTION OF LONG CHIPS AND PRODUCTS MADE FROM SAME
Erik Borje Bang, Kolonivagen 5, Vaxjo, Sweden
Filed Dec. 3, 1970, Ser. No. 94,730
Claims priority, application Sweden, Dec. 3, 1969, 16666/69
Int. Cl. B27l *11/08*
U.S. Cl. 241—28 **1 Claim**

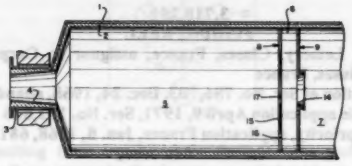


Long chips or bundles of fiber are produced from wood by exposing the wood to shearing stresses obtained by forces produced by pressing jaws or similar means against the surface of the wood or by forces causing torsion in the wood around an axis parallel to the direction of fiber. Additionally the stresses may be caused by flexure around an axis perpendicular to the direction of fiber and/or by cutting parallel to the direction of fiber. Pressing perpendicular to the direction of fiber may also occur.

3,718,286
METHOD AND APPARATUS FOR GRINDING MINERAL MATERIALS

Gunnar Rindal Fagerholt, Copenhagen-Valby, Denmark, assignor to F. L. Smidth & Co., New York, N.Y.

Division of Ser. No. 790,020, Jan. 9, 1969, Pat. No. 3,633,832. This application Nov. 12, 1970, Ser. No. 88,972
Int. Cl. B02c *17/06*
U.S. Cl. 241—30 **7 Claims**



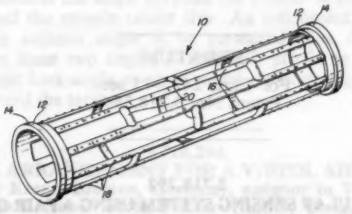
Method of grinding granular mineral materials in a rotating mill having at least one partially confined grinding zone. The material is fed through a constricted opening into one end of this grinding zone, atmospheric air being permitted to enter in the same way. The coarse material is gradually ground down into finely divided form and is discharged through a constricted opening into an adjoining collection zone and thence discharged from the mill. The rate of feed of the coarse material into the grinding zone and the rate of discharge of the ground material therefrom are so controlled that a pool of the finely ground material is maintained in the grinding zone which is so fluidized that it behaves like a liquid.

The apparatus is a tube mill having one or more grinding compartments. If there is only one grinding compartment a narrow collection compartment is located on the downstream side and if there are two grinding compartments the second one is on the downstream side of the narrow compartment. The wall of this compartment adjacent the grinding compartment includes a screen section, and the opposite wall a dam ring and overflow opening.

3,718,287
COLLAPSIBLE SPOOL

Michael P. Sottosanti, 84 Connecticut Avenue, Waterbury, Conn.

Filed April 30, 1970, Ser. No. 33,252
Int. Cl. B65h *75/20, 75/24*
U.S. Cl. 242—118.11 **6 Claims**

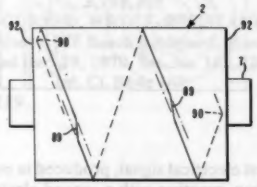


A collapsible spool useable for dyeing synthetic thread wound thereon and comprising a molded polyethylene spool of unitary construction and having continuous rings at end portions and an intermediate body portion comprising a plurality of equally circumaxially spaced similar axially elongated members joined at opposite ends to the end rings. The circumferential spacing between the elongated members is greater than the circumferential dimension thereof. The body portion also includes a plurality of short connecting members extending transversely between the elongated members and staggered axially to provide for discontinuity in radial planes and substantially uniform radial collapsibility throughout the length of the elongated members. The polyethylene softens sufficiently at conventional dye bath temperatures to permit thread shrinkage readily to collapse and permanently deform the spool intermediate body portion.

3,718,288
YARN PACKAGE

Uel Duane Jennings, Signal Mountain, Tenn., and Wayne Clifford Sparling, Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 865,550, Oct. 13, 1969, Pat. No. 3,589,631. This application March 31, 1971, Ser. No. 130,036
Int. Cl. B65h *55/04, 54/28*
U.S. Cl. 242—178 **7 Claims**



A process for winding yarn into a cylindrical-bodied substantially straight-ended package wherein the yarn is traverse wound in layers of helical coils on a bobbin by traversing the yarn axially through successive stroke lengths in repeating time periods to form a package and wherein two successive stroke lengths form a traverse cycle. The improvement includes the steps of progressively decreasing the stroke length to a first value then increasing the stroke length to a second value within 50 percent of the duration of each of the time periods, while varying the helix angle at least twice during a preponderance of the traverse cycles. The winding apparatus for accomplishing this includes a divided barrel cam with sliding portions that are moved axially in concert in a programmed sequence to disperse the yarn laydown at the reversals. Yarn packages of improved formation and stability are wound using the process and apparatus of this invention. The packages are formed of a plurality of layers of helical coils, wherein each coil includes successive helical and reversal portions and are characterized by having at least two inflections in the helical portions of a preponderance of the coils.

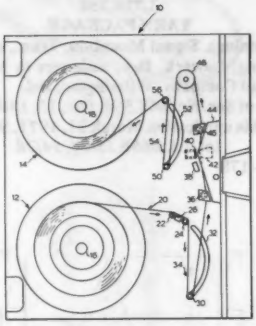
3,718,289
REEL SERVO SYSTEM

Benjamin Alaimo, Camarillo, Calif., assignor to Peripheral Equipment Corporation, Chatsworth, Calif.

Filed March 5, 1971, Ser. No. 121,323
Int. Cl. B65h *59/38, 63/02*; G03b *1/04*
U.S. Cl. 242—190 **10 Claims**

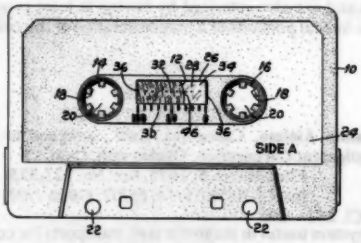
A system useful in magnetic tape transports for controlling a reel drive motor so as to provide steady tension on the tape. Magnetic tape transports generally utilize three separate motors to respectively drive the capstan and two reels. A separate servo system is usually provided for controlling the angular speed of each of the drive motors. In the case of a reel servo system, the system controls the angular speed of a reel drive motor to maintain steady tape tension in spite of (1) rapid changes in linear tape speed; e.g., start-stop operations and (2) slowly occurring changes in reel radius. A tape reservoir is

formed by a spring urged tension arm which bears against the tape between the capstan and reel. The tension arm makes rapid positional changes in response to rapid tape speed changes to isolate the reel inertia from the capstan, for example, on starting. This positional change of the tension arm provides time for the reel to come up to speed and pay tape out at the tape speed established by the capstan. The tension arm makes gradual positional changes in response to variation in radius of the tape quantity on the reel. In accordance with the



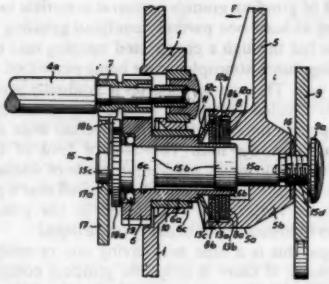
invention, a first electrical signal, produced in response to tension arm position, together with a second electrical signal indicative of capstan speed, is used to control the angular speed of the reel drive motor. The major portion of the range of possible tension arm position change is dedicated to allowing for rapid changes required in reel angular speed as a consequence of changes in capstan speed and a considerably smaller portion of this range is dedicated to changing reel angular speed in response to changes in tape quantity radius.

3,718,290
RECORDING TAPE SEGMENT INDICATOR
Ronald G. Wright, 4 Sylvan Way, West Caldwell, N.J.
Filed Jan. 27, 1971, Ser. No. 110,025
Int. Cl. G03b *1/04*; G11b *15/32, 23/04*
U.S. Cl. 242—199 **11 Claims**



A transparent window of a recording tape container or cassette has longitudinally spaced markings disposed directly over the tape supply winding indicating the location of internal pre-recorded tape segments. Precision measurements are made of the beginning or end of each segment with respect to the center of the supply reel and the end of the window. The tape recording is played in a standard cassette record player and the radial edge of the tape at the selected point is magnified and measured. Marks indicating the window ends and segments are placed on a magnified scale pattern which is photoreduced to normal size and printed repetitively on transparent plastic sheets. The sheets are cut to the size of the window which is inserted into the cassette opening with the marks, such as dots, positioned directly over the internal segment points on a repetitive basis for mass produced tape recordings.

3,718,291
FISHING REEL
Jean-Paul Lemery, Cluses, France, assignor to Carpano & Pons, Cluses, France
Continuation of Ser. No. 786,703, Dec. 24, 1968, abandoned.
This application April 9, 1971, Ser. No. 132,826
Claims priority, application France, Jan. 8, 1968, 68135212
Int. Cl. A01k *89/02*
U.S. Cl. 242—219 **9 Claims**



A fishing reel comprises a spool mounted between two connected together flanges and a crank for turning the spool projects outwardly from one of the flanges, the crank is provided with a bell-shaped housing therein and a variably set torque limiting device interconnecting the crank and spool is disposed in the housing. The torque limiting device comprises a disc clutch assembly having a plurality of friction washers disposed between bearing surfaces connected to both the crank and a gear system for rotating the spool. The torque limiting device is variably set by the user to effect slippage therein at any desired torque value resulting in relative rotation between the crank and the spool. In addition, the torque limiting device is contained in a cartridge and is removably mounted in the fishing reel assembly.

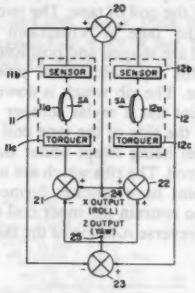
ERRATUM

For Class 242—75 see:
Patent No. 3,718,354

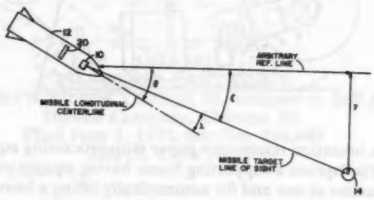
3,718,292
ANGULAR SENSING SYSTEM USING A PAIR OF STRAPPED-DOWN RATE GYROS
Ernst T. Evers-Euterneck, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army
Filed Jan. 7, 1971, Ser. No. 104,693
Int. Cl. F41g *7/00, 7/14, 9/00*
U.S. Cl. 244—3.11 **3 Claims**

An angular sensing system is disclosed in which two rate gyros are strapped-down to a transverse bulkhead of a missile,

with their spin axes and input axes antiparallel, and their output axes parallel. Alignment loops for the gyros provide outputs resulting from inputs in the output axes and outputs resulting from inputs in the input axes of the gyros. The outputs are directly related to roll and yaw of the missile.

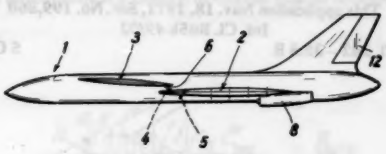


3,718,293
DYNAMIC LEAD GUIDANCE SYSTEM FOR HOMING NAVIGATION
Gilbert C. Willems, Madison, and Ray H. Farmer, Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army
Filed Jan. 4, 1971, Ser. No. 103,411
Int. Cl. F42f *15/02*; F41g *7/00, 9/00*
U.S. Cl. 244—3.16 **2 Claims**



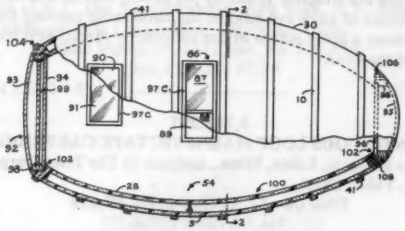
A system and method of guiding homing missiles toward low maneuverability targets. Dynamic lead navigation is implemented with a body fixed detector and a two-degree-of-freedom position gyroscope. The position gyro can be a part of the normal missile autopilot and need not represent an additional instrument. In flight toward a target, a target seeker, which yields a proportional output, measures the angle between the missile-target line-of-sight and the missile center line. An instrument gyro allows an attitude angle to be measured. The difference between these two angles is obtained, providing the missile-target look-angle or error signal for directing the missile toward the target.

3,718,294
WING ARRANGEMENT FOR A V/STOL AIRCRAFT
Gunter Krenz, Bremen, Germany, assignor to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Germany
Filed Mar. 11, 1971, Ser. No. 123,161
Claims priority, application Germany, Mar. 14, 1970, P 20 12 243.4
Int. Cl. B64c *3/38, 15/00*
U.S. Cl. 244—46 **6 Claims**



A vertical/short takeoff and landing (V/STOL) aircraft with a delta wing which is provided with a power unit assembly to produce vertical and/or horizontal thrust. Means are provided which control the slight interference between power unit and airframe air flows. The delta wing may also have different sweepback in that it may be designed to have a leading edge which is kinked once or several times (double or multiple delta). The wing may have outwardly and/or inwardly curved leading edges.

3,718,295
BARREL-CURVED, WRECK-RESISTANT CABIN
Alvin Edward Moore, 916 Beach Boulevard, Waveland, Miss.
Filed Dec. 29, 1970, Ser. No. 102,320
Int. Cl. B64c *1/00*
U.S. Cl. 244—119 **34 Claims**



A light-weight, shock-resistant vehicular cabin or other insulated, barrel-curved container, mainly constructed of elongated, stave-like members, each of which comprises: a pair of spaced side pieces (of wood, sheet metal or metallic mesh), having outer edges that curvingly slope from the greatest bulge of the container toward the forward and rearward ends of the cabin; firm, molded filler material (plastic — preferably foamed — or light-weight concrete or the like) between the side pieces; and a hollow element or elements in the filler, containing gaseous material (air or other gas, optionally pressurized, or gas-cell-containing foam plastic). The hollow elements may be: single, sealed, bent tubes, each being nearly the length of the cabin; cans in end-to-end relation; bent bamboo or straight bamboo sections; slender, plastic tubes; or small balloons. The gaseous material in the hollow elements may be: air or non-aerial gas at or above atmospheric pressure; or gas-cell-containing foam plastic, which optionally may be under internal, above-atmospheric pressure. Bonding material is between adjacent faces of the stave-like members, and preferably the assembled members are tautly encompassed by hoops or equivalent looped means — for example, tautly applied metallic mesh. The outer skin means may comprise rubber sheeting or other rubber coating. In the preferred vehicular form, windowed doors or hatches are provided.

3,718,296

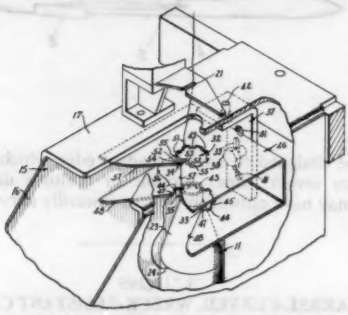
BALLOON BREAKER FOR THREAD WINDERS

Robert J. Mahoney; Donald W. Dean, and Joseph Uzuanis, Jr., all of Rockford, Ill., assignors to Barber-Colman Company, Rockford, Ill.

Continuation of Ser. No. 31,117, April 23, 1970, abandoned. This application Nov. 18, 1971, Ser. No. 199,860

Int. Cl. B65h *49/02*

U.S. Cl. 242—35.5 R **5 Claims**



This balloon breaker for a high speed winder is mounted in the pocket of the active bobbin and comprises a U-shaped stamping with parallel legs disposed horizontally and formed with upper and lower alined eyes which are open to respectively receive the running thread and the upper end of the supply bobbin as the latter is transferred to active position for restarting the winding. Inwardly projecting lugs spaced around the interior of each eye engage the ballooning running thread to produce a jerky action of the ballooning thread as it travels around the eyes.

3,718,297

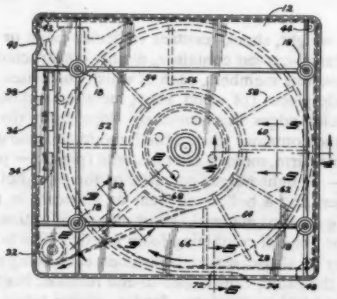
CONTINUOUS LOOP MAGNETIC TAPE CARTRIDGE

George R. Eagle, Edina, Minn., assignor to The Telex Corporation, Tulsa, Okla.

Filed Dec. 14, 1970, Ser. No. 97,618

Int. Cl. B65h *17/48*

U.S. Cl. 242—55.19 A **9 Claims**



A reel hub and turntable are journalled to one side of a cartridge housing for receiving and supporting one side of an endless coil of magnetic tape. Tape guide means are attached to the sides of the cartridge housing for guiding the tape from the inner periphery of the coil past a reading or writing head opening and then returning the tape to the outer periphery of the coil. A plurality of elongated rib members project from the inside surface of the side of the cartridge housing which is opposite the reel hub and turntable. The rib members are radially oriented with respect to the turntable's axis of rotation and are angularly spaced from one another around the axis of rotation. The rib members extend from the inner periphery of the coil of magnetic tape to the outer periphery thereof and act as a side wall for the coil of tape. The two ribs which flank the point where the tape is withdrawn from the inner periphery of the coil are shaped and positioned to act as abutments for limiting the tape withdrawal point to a predetermined angular range. The rib which is downstream from the tape withdrawal point has a mylar scraper attached thereto which bears against the side of the tape coil and prevents the withdrawn tape from being swept under the rib by forward rotation of the tape coil. The ribs which are upstream from the tape withdrawal point have notches formed in the radially inner ends thereof to restrain the inner coil of tape when it is axially displaced by reverse rotation of the tape coil.

3,718,298

PAPER STRIP PROCESSING EQUIPMENT

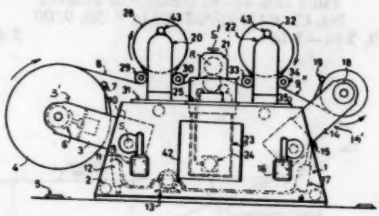
Raymond Louis Roger Lucas, c/o Off. Tech., 133 bis rue Mouneyra, Prechac, France

Filed Jan. 13, 1971, Ser. No. 106,052

Claims priority, application France, Jan. 23, 1970, 7002363

Int. Cl. B65h *19/30, 25/22*

U.S. Cl. 242—58.6 **6 Claims**



The invention relates to a paper strip processing equipment which comprises a supporting frame having a paper roll lifting mechanism at one end for automatically lifting a heavy roll of paper from the ground and a rewinding mechanism at its other end for rewinding the paper strip as it unrolls from the roll and passes through a number of processing stations mounted on the frame between the lifting mechanism and the rewinding mechanism.

3,718,299

ROLL OUT STAND

John H. Osgood, Cherry Hill, N.J., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Nov. 22, 1971, Ser. No. 200,942

Int. Cl. B65h *19/30*

U.S. Cl. 242—58.6 **19 Claims**

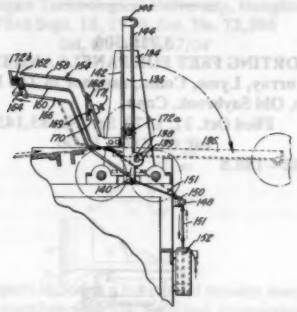
The roll out stand for a paperboard corrugator is an L-shaped vehicle which eliminates the need for manually pushing rolls into position for elevation by arms on the vehicle.

3,718,300

APPARATUS FOR ROLLING TUBULAR FABRICS

Edward I. Aronoff, 605 Dorais Street, St. Laurent, Quebec, Canada

Division of Ser. No. 695,605, Jan. 4, 1968, Pat. No. 3,561,306.
This application Nov. 9, 1970, Ser. No. 87,951
Int. Cl. B65h *17/08, 19/22*
U.S. Cl. 242—66 **2 Claims**



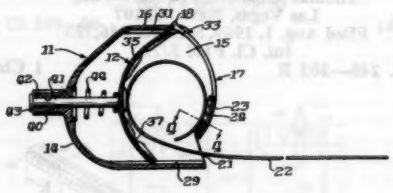
A fabric rolling device including a pair of driven rollers adapted to receive a core on which the fabric is to be rolled, a guide channel for guiding the ends of the core as the fabric is being rolled thereon, a branch channel guide device for a branch guide channel merging with the main guide channel including a retaining flap for withholding a second reserve core adapted to simultaneously feed the reserve core when the core on which the fabric has been rolled has been completed and removed.

3,718,301

FILMSTRIP CARTRIDGE

Robert B. Morton, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed June 1, 1971, Ser. No. 148,668
Int. Cl. C03b *23/02*
U.S. Cl. 242—71.1 **7 Claims**



A filmstrip cartridge having a slidable pressure shoe positioned to form a roll of film starting with a predetermined small inside diameter and to maintain this small inside diameter while additional film is being fed into the cartridge only onto the outside diameter of the roll of film for increasing the length of film carrying capacity of a fixed sized cartridge.

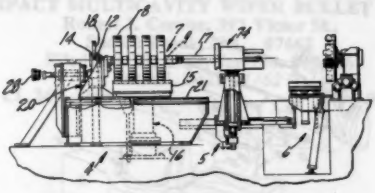
3,718,302

COIL AND MANDREL SEPARATING MACHINERY

Robert E. Mount, Pine Brook; Gerrit De Gelleke, Parsippany, both of N.J., and Joseph Pundyk, New York, N.Y., assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Jan. 29, 1971, Ser. No. 110,946
Int. Cl. B21c *47/24*
U.S. Cl. 242—81 **14 Claims**

Disclosed herein is equipment for receiving, for example, assemblies of which each comprises a windup mandrel and slit coils carried thereon as used in the operation of a duplex foil-slitting and rewinding machine, removing the coils from the mandrel, and processing the coils into a compact package while retrieving the mandrel for use in further slitting and rewinding operations. The portion of the equipment of especial interest herein effects a change of coaxial spaced relationship



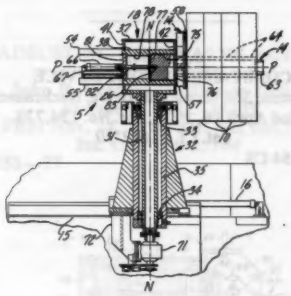
of the coils on the windup mandrel to stacked or coaxial juxtaposed relationship. To accomplish such stacking, structure is provided for facilitating the removal of coil separating elements of the assembly which fit together about the main shaft of the mandrel, such as drive collars and various types of spacers.

3,718,303

TURNSTILE-TYPE COIL-GATHERING MACHINE

Robert E. Mount, Pine Brook; Gerrit DeGelleke, Parsippany, both of N.J., and Joseph Pundyk, New York, N.Y., assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed March 18, 1971, Ser. No. 125,694
Int. Cl. B21c *47/24*
U.S. Cl. 242—81 **14 Claims**



A machine generally in the form of a pedestal with a revolvable cantilever-supporting probe for receiving slit coils of foil, paper, etc. or other annular articles which have central cylindrical openings differing in diameter such as to require the machine to include a probe of special diameter for each size of annular article handled. The machine is useful for collecting such articles in a compact package and includes facilities for shifting the coils from the probe to another coil-receiving apparatus.

ERRATA

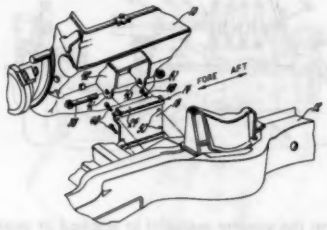
For Classes 244—3.11 thru 244—119 see:
Patents Nos. 3,718,292 thru 3,718,295

3,718,304

ENGINE MOUNT ASSEMBLY

John C. Schulz, Springboro, and Richard W. Lyday, Vandalia, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed March 23, 1972, Ser. No. 237,441
Int. Cl. F16f *15/00*
U.S. Cl. 248—9 **3 Claims**



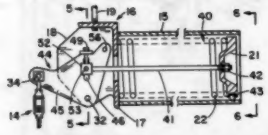
An engine mount assembly for resiliently supporting an engine on a frame of a motor vehicle includes a pair of mounting brackets and an insert. The insert and one of the brackets have cooperating rails preventing relative movement therebetween in two mutually perpendicular directions while rivets normally secure the insert and this one bracket against movement in a third direction perpendicular to the other two directions. Rubber is secured between the other bracket and the insert for yieldingly resisting relative movement therebetween to normally isolate engine vibrations and these members also have abutments which engage on predetermined relative movement therebetween in the stated third direction to transmit force to the rivets. Rubber secured between the insert and the stated one bracket operates to yieldingly resist movement therebetween in the stated third direction when the rivets are sheared.

3,718,305

CONSTANT SUPPORT DEVICE

Leonard S. Suozzo, 366 Maple Hill Drive, Hackensack, N.J.

Filed April 16, 1971, Ser. No. 134,728
Int. Cl. F16l *3/20*
U.S. Cl. 248—54 CS **3 Claims**



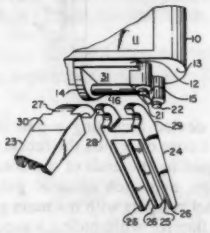
A device for exerting a substantially constant supporting force to a vertically movable load, such as piping, the device comprising a support including a tubular housing having an end wall; a spring mechanism within the housing and including a movable backing plate, a spring bearing at opposite ends against the backing plate and housing end wall, and rod means connected at one end to the backing plate and extending through the spring and the housing end wall; and a lever pivotal relative to the support and pivotally connected to the other end of the rod means and to a load-carrying unit about spaced parallel axes. The device also includes means interposed between the backing plate and the housing for minimizing friction therebetween, adjustable means connected to the lever and the rod means for readily varying the length of the load arm of the device, and adjustable preset means for conveniently and simply converting the device into a rigid support when the piping is in its "cold load" position at the time the device is assembled and prior to installation and at such times as the piping is out of normal service and is subjected to a maintenance procedure, such as hydrostatic testing, following initial operation.

3,718,306

SUPPORTING FEET FOR PANELS AND THE LIKE

I. Gillis Murray, Lyme, Conn., assignor to The Brewster Corporation, Old Saybrook, Conn.

Filed Oct. 22, 1970, Ser. No. 83,145
Int. Cl. F16m *13/00*
U.S. Cl. 248—188.8 **7 Claims**



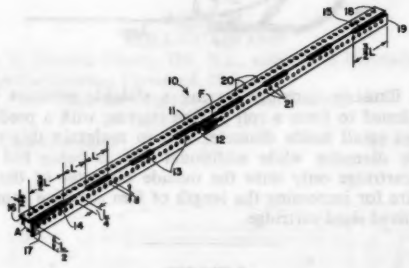
Supporting feet for panels and the like which comprise a pair of elongated members, each formed at one end thereof with means engaging a horizontally extending pin extending between a pair of flanges secured to the undersurface of a vertically extending structure for supporting the same in proper upright position.

3,718,307

MULTIPURPOSE SUPPORT BAR

Thomas Albanese, 116 Norlen St., Las Vegas, Nev. 89107

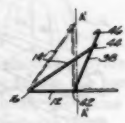
Filed Aug. 1, 1969, Ser. No. 846,723
Int. Cl. F16l *3/22*
U.S. Cl. 248—205 R **1 Claim**



An elongated angle bar is formed by folding a strip about its longitudinal center line to form first and second members at right angles to each other. A series of slots of equal length and spaced at equal intervals are formed in the longitudinal center line and terminate at each end in somewhat longer slots so that end portions of the members may be bent out of the plane of the members to

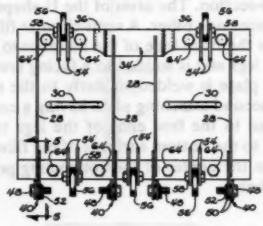
define tabs. These tabs serve to mount the bar in a number of different desirable positions. The members themselves include a series of holes for mounting various devices such as electrical outlet boxes, brackets for supporting plumbing pipes, and other equivalent structures.

3,718,308
BOOK HOLDER
Paul E. Hainault, Houghton, Mich., assignor to Board of Control of Michigan Technological University, Houghton, Mich.
Filed Sept. 18, 1970, Ser. No. 72,596
Int. Cl. A47b *97/04*
U.S. Cl. 248—460 **15 Claims**



A book support includes a horizontal tension member and a compression member and has a hinged connection between the two about which they can pivot between a collapsed position wherein one overlies the other and an extended position wherein the later is generally upright and at an angle to the former. A second tension member is connected to both of the already mentioned members and is arranged to be extended in a taut condition between the two when they are pivoted to the extended position. The horizontal tension member has an end extending beyond the point of connection of the second tension member thereto, this end has a non-skid surface for engaging a book edge as the book is rested against the compression member.

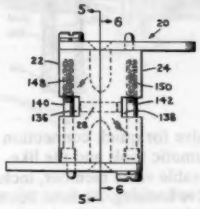
3,718,309
PIPE COATING MOLD
Robert J. Harris, Marrero, La., assignor to H. C. Price Co., Bartlesville, Okla.
Filed Nov. 5, 1970, Ser. No. 87,227
Int. Cl. B22d *19/00*
U.S. Cl. 249—90 **14 Claims**



A breakaway mold for forming a sealing joint between two sections of coated pipe is configured to permit easy removal of the mold after the coating material has hardened. Two identical mold halves present the mold, and each half includes a central arcuate section and a pair of opposed, integral planar end sections which facilitate removal of the mold by assuring a shearing action between the mold and the molding material. Each mold half is also provided with outwardly extending flanges which mate with the flanges of the other mold half to provide a sealing surface at each side of the mold. Breakaway bolts on the mold flanges provide readily accessible means for moving the mold halves away from the molding material.

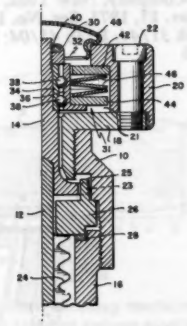
A special tool is provided to assure removal of one mold half after the other mold half has been previously broken away from the molding material. The tool includes an arcuate brace which is positioned in overlying relationship to the pipe and structure for engaging the previously removed mold half after the latter has been repositioned around the pipe. The second mold half can then be removed by applying a force against the first-removed mold half.

3,718,310
COMPACT MULTICAVITY WIPER BULLET MOLD
Robert J. Cerone, 397 Victor St., Saddle Brook, N.J. 07662
Filed Jan. 21, 1971, Ser. No. 108,266
Int. Cl. B41b *11/62*
U.S. Cl. 249—165 **9 Claims**



A bullet mold having complementary sections which form mold cavities on opposite sides of the mold assembly. Wiper plates are associated with the mold cavities on each side of the assembly. The complementary mold sections are adapted to be mounted on handles or other support means for rapid assembly and disassembly of the mold components, and aligning pins insure accurate positions of the mold sections to produce a finished mold product which conforms to predetermined dimensional requirements.

3,718,311
SELF-ADJUSTING STOP VALVE ACTUATING MECHANISM
John R. Braden, 315 Dewey Drive, Annapolis, Md. 21401
Filed Nov. 24, 1971, Ser. No. 201,785
Int. Cl. F16k *31/44*
U.S. Cl. 251—77 **6 Claims**

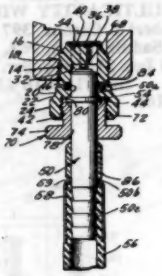


The invention is a high pressure stop valve with a non-rotating stem which utilizes a pre-loaded spring assembly for applying a closing force to the valve stem.

3,718,312
QUICK CONNECT AND DISCONNECT VALVED COUPLING

Leroy C. Payne, La Habra, Calif., assignor to Standard Pneumatic Motor Company, Whittier, Calif.

Filed May 3, 1971, Ser. No. 139,752
Int. Cl. F16l 29/00, 37/28
U.S. Cl. 251—149.4 4 Claims

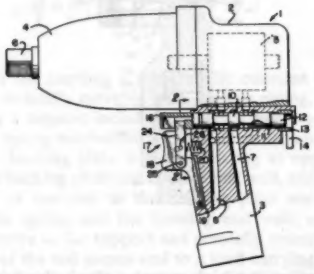


A pneumatic valve for quick connection and quick disconnection from pneumatic tools and the like. A normally closed valve having a movable valve member, including a valve stem, is disposed in a valve housing. An inlet bushing is screwed into a tapped opening provided therefor in the pneumatic tool and in which a connector nut, rotatably disposed on the valve body, is quickly screwed into and out of the inlet bushing, which has a web thereon engagable by the valve stem of the movable valve member for moving the valve member to the open position when the connector nut is screwed into the inlet bushing. An O-ring is located in a groove in the inlet bushing and provides an effective pneumatic seal between the connector nut and the inlet bushing when the nut is screwed into the connector. The inlet bushing normally is attached to the pneumatic tool and the valve body, with the valve member operably disposed therein, is easily and quickly disconnected from the inlet bushing and, hence, from the pneumatic tool by unscrewing the connector nut from the inlet bushing, the valve automatically closing when the valve is disconnected from the inlet bushing. The valve body with its valve member is as easily and quickly attached to the tool by screwing the connector nut into the inlet bushing, the valve then being automatically opened.

3,718,313
TRIGGER MECHANISM

Stanley M. Miller, Hopewell, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,544
Int. Cl. F16k 31/44; B23b 45/04; B27c 3/08
U.S. Cl. 251—290 3 Claims

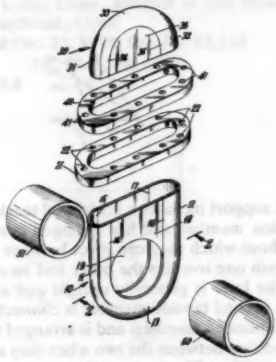


A valve operating trigger mechanism that operates a valve plunger in opposite directions from a central resting position when the valve plunger is rotated between alternate rotary positions.

3,718,314
GATE VALVE AND METHOD OF MAKING THE SAME

Arne Eikevik, 122 Washington Street, Merrick, L. I., N.Y.

Filed Sept. 24, 1970, Ser. No. 74,969
Int. Cl. F16k 27/10
U.S. Cl. 251—329 3 Claims



A gate valve body is formed from a U-shaped member wherein each leg and the bottom connecting portion of the U-shaped member have a substantially U-shaped cross-section. The arms of the U-shaped cross-section of each leg face each other. A filler plate having a concave bottom surface is extended across the front face of the U-shaped member downwardly from the free end of each leg and welded to a facing arm of each leg. A second similar filler plate is extended across the rear face of the U-shaped member and similarly welded. An attaching plate having a cut-out center portion is welded to the free ends of the legs of the U-shaped member and to the top surfaces of the filler plates.

The bonnet portion of the valve is formed from a second U-shaped member wherein each leg and the upper connecting portion of the U-shaped member have a substantially U-shaped cross-section. The arms of the U-shaped cross-section of each leg face each other. A semi-circular filler plate is positioned across the front face of the member to fill the opening between the legs and is welded to a facing arm of each leg. A similar filler plate is welded similarly to the rear face of the member. A second attaching plate having a cut-out inner portion is welded to the free ends of the legs of the U-shaped member and to the bottom surfaces of the filler plates. A hole is provided in the center of the connecting portion of the U-shaped member.

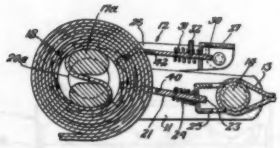
3,718,315
STRAP ADJUSTER DEVICES

John Richard Huber, Holicong, Pa., assignor to Eastern Rotorcraft Corporation, Doylestown, Pa.

Filed Jan. 4, 1971, Ser. No. 103,531
Int. Cl. A63b 21/04
U.S. Cl. 254—164 1 Claim

A strap adjusting and tensioning assembly includes a frame or body portion carrying a drum for holding the adjusted portion of the strap. Ratchet wheels are connected to the drum and a holding pawl member is mounted in the frame and is engageable with the ratchet teeth. A movable handle having a second pawl member mounted thereon is supported on the

body for movement therewith. The handle pawl is formed with a portion which engages the wrapped strap when the strap is wrapped up to give a predetermined diameter after take up by movement of the handle. The frame pawl is shaped to be clear



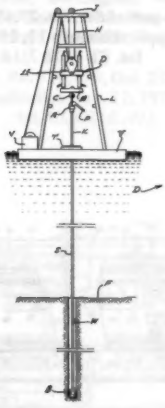
of the wrapped strap surface to provide a condition where the wrapped strap diameter causes the handle pawl to disengage from the ratchet teeth while the frame pawl member remains in holding engagement with the teeth.

3,718,316

HYDRAULIC-PNEUMATIC WEIGHT CONTROL AND COMPENSATING APPARATUS

Edward Larralde, Santa Barbara, and Ronald E. Beaufort, Downey, both of Calif., assignors to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed Sept. 4, 1970, Ser. No. 69,758
Int. Cl. B66d *1/48*
U.S. Cl. 254—172 **4 Claims**



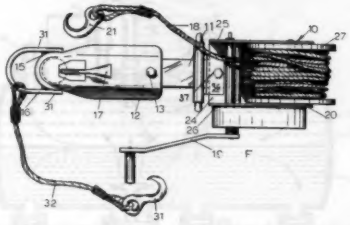
Apparatus automatically compensating for relative vertical movement between a hoisting or supporting mechanism and a load carried thereby, which load, for example, may be a running string connected to a drill bit used in drilling a subaqueous well bore, the mechanism supporting the running string being mounted on a floating vessel anchored over the well bore. The compensating apparatus includes a cylinder and piston device containing a hydraulic fluid exerting a lifting or tensioning force on the running string, or other load, the pressure on the hydraulic fluid being maintained generally constant by a gaseous medium despite relative axial movement between the cylinder and piston portions of the device, that might result from heaving of the vessel due to wind and wave action, or the lowering of the running or drilling string as the bit drills the hole.

3,718,317

PORTABLE HAND WINCH AND ANCHORING AND STABILIZING MEANS

Elwyn P. Hilmer, 3028 Valmont Avenue, Boulder, Colo.

Filed Jan. 27, 1971, Ser. No. 110,061
Int. Cl. B66d *1/00*
U.S. Cl. 254—186 HC **4 Claims**



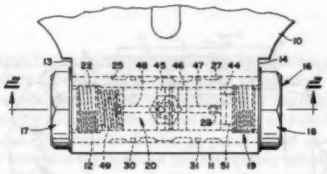
The specification discloses a combination ball and loop with a hand winch. The hand winch is provided with an anchor means. The anchoring means is made up of a bar and loop at the end of the bar. The winch is attached to one end of the bar and a female trailer hitch is mounted on the other end of the bar. A ball is attached to aU-shaped loop by means of a plate which closes the legs of the loop. The trailer hitch ball is supported on the plate. The ball is received in the female trailer hitch member. To stabilize the winch, a handle is attached to the bar and winch. The handle is used to hold the winch and bar from twisting laterally and to stabilize it while the crank is being turned. A cable is attached to the loop which may be used for anchoring the winch to a tree or other object.

3,718,318

VIBRATOR FOR FOUNDRY MOLDING AND LIKE MACHINES

Warren A. Blower, Brecksville, and Emil P. Jerse, Mentor, both of Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed April 5, 1971, Ser. No. 131,099
Int. Cl. B01f *11/00*
U.S. Cl. 259—1 **9 Claims**

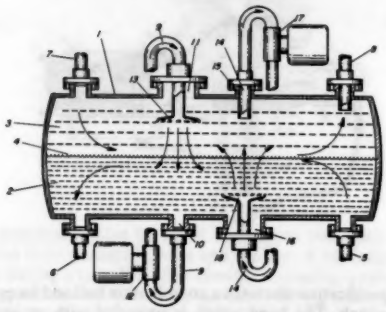


A vibrator for foundry molding machines which includes a through bore in the table or pattern stool or other part to be vibrated of the machine, a sleeve in the through bore, end caps threadedly engaged with the sleeve and bearing on the ends of the through bore to stress the sleeve, a ram in the sleeve, and sound attenuating inserts in the cap to reduce the noise level of the vibrator.

3,718,319
APPARATUS AND PROCESS FOR CONTACTING IMMISCIBLE LIQUIDS

Irving H. Weisman, Palisades Park, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Nov. 16, 1971, Ser. No. 199,166
Int. Cl. B01f 15/00
U.S. Cl. 259—4 6 Claims

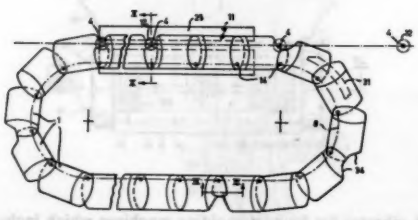


A process and apparatus for contacting a liquid phase of one density with another liquid phase of different density immiscible therewith. The apparatus includes a horizontal tank, wherein the two liquids form an upper layer and a lower layer, inlets and outlets for the two liquids, and an external recycling system, which removes liquid from each layer intermediate the inlets and outlets and discharges it into the other liquid layer.

3,718,320
AUTOMATIC SLOT SEALING SYSTEM FOR CONTINUOUS FURNACES

Gerard P. Jespers, Dusseldorf, Germany, assignor to Ferro Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 26,518, April 8, 1970, abandoned. This application June 10, 1971, Ser. No. 151,876
Int. Cl. F27b 9/24
U.S. Cl. 263—8 R 5 Claims

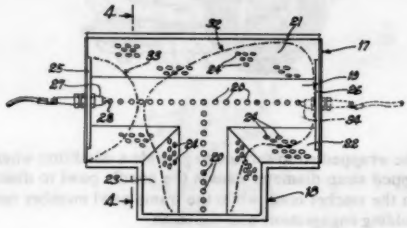


An automatic, continuously self-sealing device for preventing heat loss from a continuous heat treating furnace, through the slot therein which accommodates a continuous conveyor for supporting and carrying ware through said furnace.

3,718,321
COMBINED BURNER, FAN AND IGNITER

Erhard E. Alms, Barrington, Ill.

Continuation of Ser. No. 50,687, June 29, 1970, abandoned. This application Jan. 17, 1972, Ser. No. 218,450
Int. Cl. F23l 9/04
U.S. Cl. 263—19 A 6 Claims

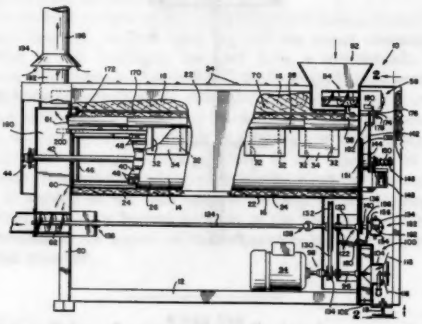


A combination burner, fan and igniter for an air heating device for use in a grain dryer or the like which combination takes cognizance of the non-uniform distribution of air from the fan around the burner to locate the igniter where it will be subject to the least heat from the burner. As a result, the life of the igniter is increased from approximately two weeks to a year or more.

3,718,322
HEAT TREATING SYSTEM FOR GRAINS AND LEGUMES

Robert F. Skelton, Bluffton, Ind., assignor to Mix-Mill, Inc., Bluffton, Ind.

Continuation-in-part of Ser. No. 27,683, April 13, 1970, abandoned. This application July 12, 1971, Ser. No. 161,560
Int. Cl. F27b 7/14
U.S. Cl. 263—33 R 30 Claims



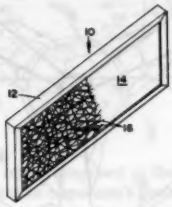
An apparatus for heat treating granular, organic materials and primarily, through not exclusively, intended for such treatment of whole soybeans, comprising a drum mounted for rotation within an elongated receiver, the drum being provided with radially outwardly and longitudinally extending fins forming a peripheral series of pockets traveling with the drum, a gas or electric heating element associated with the receiver and means for driving the drum to cause the granular material to be thrown rapidly and intermittently into close proximity to the heating element.

3,718,323

RADIANT LINING

Richard W. Ulbrich, 126 West Dixon Ave., Dayton, Ohio

Filed Feb. 1, 1971, Ser. No. 111,355
Int. Cl. F27b 3/02
U.S. Cl. 263—40 R 19 Claims



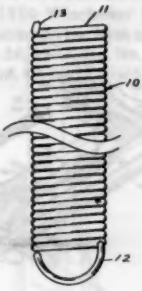
The radiant screen lining comprises a plurality of randomly oriented discrete strands of heat resistant metal pressed into a mat of appropriate density and thickness. The mat is applied to a variety of heating apparatus by suitable securing means and positioned therein to interfere with radiated heat so that each strand is heated and radiates its heat for utilization by the heating apparatus. The lining can be applied to the inner walls of an oven, furnace, fire box, and the like.

3,718,325

REPAIR CLAMP FOR SPRING

Donald L. Nystrom, 344 Dutch Rd., Fairview, Pa.

Filed July 17, 1970, Ser. No. 55,658
Int. Cl. F16f 1/12
U.S. Cl. 267—74 3 Claims



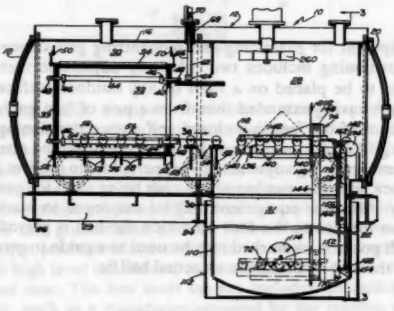
The specification discloses an adapter for a helical spring. The adapter is made up of a plug having an external spiral groove defined by a spiral ridge. The groove receives an end of the spring. The spring is clamped to the plug by means of a clamp such as a hose clamp. The plug has an eye bolt attached to it whereby the spring can be attached to a device to be supported.

3,718,324

VACUUM FURNACE AND WORK CART FOR USE THEREIN

Herbert W. Westeren, Barrington; William H. Kimball, Providence; Vincent Scotto, Warwick, and Wallace S. Vanderford, Jr., Coventry, all of R.I., assignors to C. I. Hayes Inc., Cranston, R.I.

Division of Ser. No. 770,779, Oct. 25, 1968, Pat. No. 3,599,946. This application Nov. 12, 1971, Ser. No. 163,057
Int. Cl. C21d 1/12
U.S. Cl. 266—5 R 9 Claims



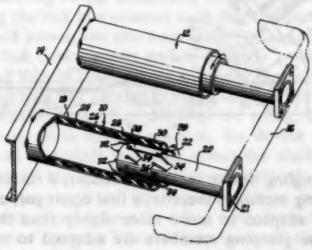
A high vacuum electric furnace for heat treating metallic articles having a work cart mounted for movement therein and including a heating chamber for receiving said work cart during the heat treating operation, said work cart having heat shielding means fixed thereto, and roller assembles located in said furnace over which said work cart moves for transfer to and from said heating chamber.

3,718,326

TORSIONS IMPACT ENERGY ABSORBING DEVICE

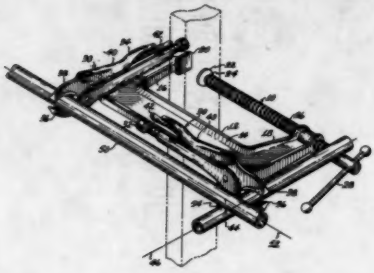
Theodore F. Ristau, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 26, 1971, Ser. No. 165,513
Int. Cl. B60r 19/08; F16f 7/02, 7/12
U.S. Cl. 267—140 4 Claims



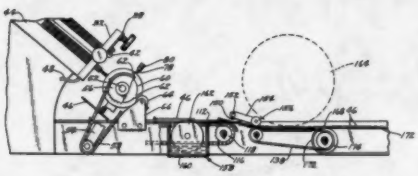
An impact energy absorbing device includes a pair of tubular members arranged for telescopic movement relative one another upon application of impact force thereto, a third tubular member attached to one of the pair of tubular members by annular elastomeric bushings press-fitted in radial compression between the walls of the respective tubular members, and a rotary motion producing mechanism in connection between the third tubular member and the other of the pair of tubular members to convert axial telescopic movement of the pair of tubular members into rotary movement of the third tubular member causing torsional energy storing as well as energy dissipating wind-up of the elastomeric bushings. Relief of the impact force permits the energy stored in the wound-up elastomeric bushings to restore the tubular members to their pre-impact relative positions in readiness for subsequent impacting.

3,718,327
PORTABLE VICE
Hector R. Nunez, 8618 S. Seventh Place, Phoenix, Ariz.
Filed Nov. 9, 1970, Ser. No. 87,920
Int. Cl. B25b *1/20*
U.S. Cl. 269—37 **8 Claims**



A portable vice is disclosed which is formed of a C-clamp that is adapted for rigid mounting to a structural member and is provided with auxiliary clamp means which cooperates with the C-clamp to supportingly position and hold a workpiece.

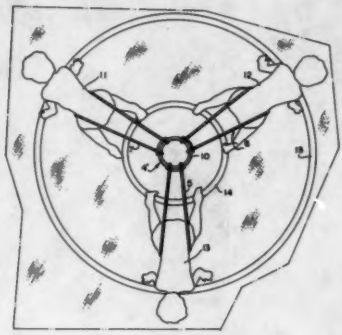
3,718,328
SHINGLING DEVICE
Alfred E. Comstock, Frontenac, Minn., assignor to Latta's Inc., Waterloo, Iowa
Filed Feb. 12, 1971, Ser. No. 115,009
Int. Cl. B65h *3/08, 3/30*
U.S. Cl. 271—20 **9 Claims**



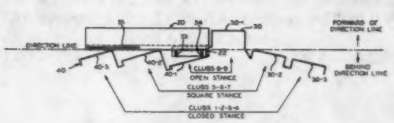
The shingling device includes a feeder, a rotating hub having grasping members thereon, a first conveyor, and a second conveyor adapted to move more slowly than the first conveyor. The grasping members are adapted to move by the feeder, grasp sheet members from said feeder, and deposit the sheet members on the first conveyor. The first conveyor carries the sheet members to the second conveyor and deposits them on the second conveyor. The sheet members stack up in shingle-like arrangement on the second conveyor because the second conveyor is moving substantially slower than the first conveyor.

3,718,329
ELASTIC AMUSEMENT OR EXERCISE DEVICE
William T. Sabo, 879 Kiowa Street, Allentown, Pa.
Filed Dec. 3, 1970, Ser. No. 94,787
Int. Cl. A63b *21/12, 21/28*
U.S. Cl. 273—1 R **4 Claims**

Three large rubber or other elastomeric bands in the form of three closed loops have respective ends tied together. In another form of the invention their ends are bound by a slip knot (or other knot) to a central flexible or rigid ring. For sport or for exercise, three players have at least a portion of their bodies (waist, feet, hands) engaged by the other respective ends of the bands. Each player then tries to pull away from the central connection and toward a specified goal so that he will be pulling against the pulls in opposing directions by the other players. The first player who is able to reach his goal wins.



3,718,330
GOLF PRACTICE EQUIPMENT
Victor T. Gariti, 552 Burton Avenue, Highland Park, Ill.
Filed Feb. 16, 1972, Ser. No. 226,805
Int. Cl. A63b *69/36*
U.S. Cl. 273—187 R **10 Claims**

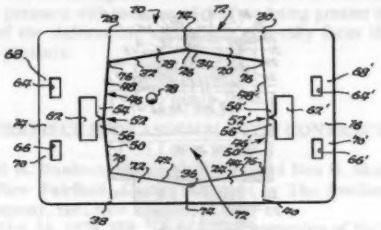


Equipment for practicing and recognizing golf stances and ball positioning includes two relatively adjustable members adapted to be placed on a floor or any outdoor surface, the members having extended therefrom a pair of foot guides for placement of the feet in a closed golf stance positioning or a square golf stance position or in an open golf stance position, the members being adjustable to properly locate the feet in accordance with the number of the club being used for practice or play. Also, the equipment may be employed to mark ball position relative to the foot off which the ball is played, and the ball position so marked may be used as a guide to properly locate the feet in relation to an actual ball lie.

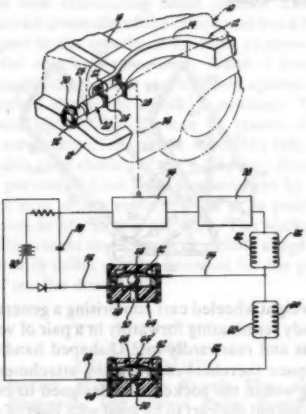
3,718,331
GAME APPARATUS WITH AN ARTICULATED FRAME
Donald W. Scott, East Aurora, N.Y., assignor to Scott-Fisher Development Co., East Aurora, N.Y.
Filed Dec. 23, 1971, Ser. No. 211,352
Int. Cl. A63b *67/00*; **A63f** *9/00*
U.S. Cl. 273—119 R **8 Claims**

An articulated frame of polygonal configuration defining a playing area therein and comprising a plurality of pivotal links

movable under the control of the player participants to engage and direct a movable object disposed in the playing area in a desired direction toward an opponent's goal.

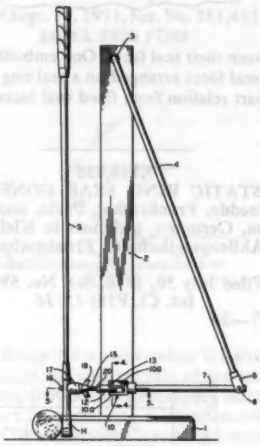


3,718,332
OCCUPANT RESTRAINT SYSTEM
Trevor O. Jones, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 27, 1971, Ser. No. 175,576
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **8 Claims**



An inflatable occupant restraint cushion is inflated at predetermined levels in accordance with predetermined levels of intensity of impact forces applied to the vehicle. When the impact forces are at a low level, above a predetermined minimum and below a predetermined maximum, a low level system initiates low level inflation of the cushion at a predetermined rate greater than normal. When the impact forces exceed the predetermined maximum, a high level system initiates high level inflation of the cushion at the predetermined normal rate. The low level system includes an anticipatory sensor, such as a transducer actuated by the relative rate of movement of telescopic members of an energy absorbing bumper system, and a low level inertial sensor, mounted on the telescopic members or on the vehicle body, and connecting low level detonators across a source of power when the impact forces exceed the capability of the energy absorbing bumper system and there is the likelihood of the onset of vehicle deformation. The high level system includes the low level inertial sensor, and a high level inertial sensor, actuated by vehicle deformation resulting from impact forces exceeding the predetermined maximum, and connecting high level detonators across a source of power. The low level and high level detonators control selective actuation of flow control orifices to obtain the predetermined rates of inflation.

3,718,333
GOLF PUTTER GUIDE
Gerald C. Santoro, 11510 Winchester Drive, and Glenn R. Sibert, 11550 Winchester Drive, both of Chardon, Ohio
Filed Feb. 24, 1972, Ser. No. 228,966
Int. Cl. A63b *69/36*
U.S. Cl. 273—192 **10 Claims**

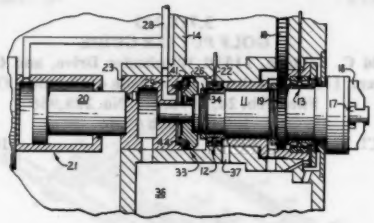


An upright pedestal supports a pendulum arm for swinging about a horizontal pivot. A generally horizontal link is connected at one of its ends to the lower end of the arm by a pivot parallel to the first pivot for swinging relative to, and with, the arm. A connecting device detachably connects a putter to the other end of the link in a manner such that the putter head is caused to rock about, and also transversely of, the longitudinal axis of the link concurrently and to follow a predetermined path of swing with its striking face in proper position transversely of the path during approach, at the instant of impact, and during the follow-through, portions of the swing. During the rearward swing from impact position, the device constrains the club head and shaft to rotate about the shaft axis in a manner to cause the striking face to rock through a progressively increasing angle to its impact position transversely across the path of swing in a direction away from the player, and thereby to "open up" the striking face and to cause the arms and wrists of the player to move more naturally during the backswing. During approach the action is reversed and the arm and wrist movements are yieldably biased to assure proper impact with the ball.

3,718,334
HYDROSTATIC BEARING SEAL ASSEMBLY
Jozef Kiwalle, Peoria, Ill., assignor to Production Technology Inc.
Continuation-in-part of Ser. No. 821,041, May 1, 1969, abandoned. This application March 18, 1971, Ser. No. 125,556
Int. Cl. F16j *15/16*
U.S. Cl. 277—27 **10 Claims**

A rotary seal assembly suitable for high pressure and high speed operation in a hydrostatic environment, including an axially fixed member defining an annular seal face, a relatively

rotatable floating seal ring capable of being urged toward the fixed member and having a seal face opposite the seal face on the fixed member with mechanical bearings being employed between the seal ring and fixed member to maintain desired



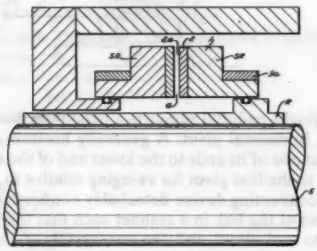
spacing between their seal faces. One embodiment includes a pair of such seal faces arranged on a seal ring and maintained in spaced apart relation from fixed seal faces by mechanical bearings.

3,718,335

HYDROSTATIC RING SEAL CONSTRUCTION

Robert Dernedde, Frankenthal, Pfalz, and Heinz Freese, Mannheim, Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Pfalz, Germany

Filed July 30, 1970, Ser. No. 59,490
Int. Cl. F16j *15/16*
U.S. Cl. 277—26 **12 Claims**



A shaft is surrounded by and fixed with a first annular sealing member, and the latter in turn is surrounded by a pair of second annular sealing members. These second annular sealing members have juxtaposed axial sealing faces which define with one another a radial gap. Each of the second members includes an annular supporting portion, an annular sealing portion fixed with the supporting portion and having one of the axial sealing faces mentioned before, and an annular stabilizing portion. One of the portions is flanked at its opposite axial sides by the other two annular portions and is composed of a material the coefficient of thermal expansion of which is either larger or smaller than that of the other two annular portions.

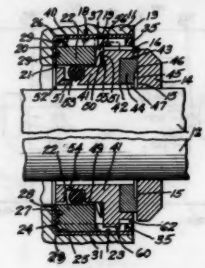
3,718,336

SHAFT SEAL AND METHOD OF MANUFACTURE

Richard H. Jackson, Downers Grove, and Dale J. Warner, Chicago, both of Ill., assignors to Gits Bros. Mfg. Co., Inc., Chicago, Ill.

Filed Jan. 22, 1971, Ser. No. 108,850
Int. Cl. F16j *9/00, 15/40*
U.S. Cl. 277—40 **1 Claim**

A mechanical shaft seal having a primary face seal and a secondary internal seal wherein the seal line of the secondary seal is balanced in axial alignment with the primary face seal. The seal is a take-apart seal having a housing with a brazed-in internal radial step, the housing receiving a stepped adapter



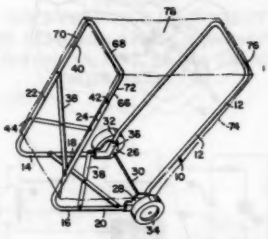
having a circumferential groove therein for the secondary seal and an axial end face adapted to hold the primary face seal. The adapter is axially movable in the housing and is urged out of the housing by a spring.

3,718,337

UNIVERSAL WHEELED CART

Mike Vosbikian, and James T. Vosbikian, both of Philadelphia, Pa., assignors to Hardware & Industrial Tool Co., Inc., Philadelphia, Pa.

Filed March 11, 1971, Ser. No. 76,105
Int. Cl. B62b *1/04*
U.S. Cl. 280—47.26 **4 Claims**



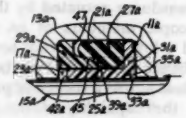
A lightweight wheeled cart comprising a generally U-shaped tubular body terminating forwardly in a pair of vertical receiving sockets and rearwardly in a U-shaped handle to define a carrying space therebetween, holding attachments adaptable for seating within the sockets and designed to connect to the sockets to permit the cart to be used with bags of various sizes.

3,718,338

SEALING ASSEMBLY

Henry A. Traub, Pacific Palisades, Calif., assignor to W. S. Shamban & Co., Los Angeles, Calif.

Filed Feb. 3, 1971, Ser. No. 112,274
Int. Cl. F16j *9/00, 15/32*
U.S. Cl. 277—165 **11 Claims**



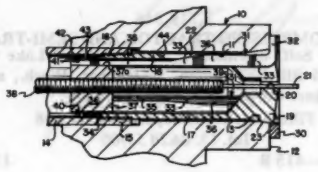
An assembly comprising a slipper ring having an axial segment and a radial segment, a resilient deformable seal ring surrounding at least a region of the axial segment, and an anti-ex-

trusion ring. At least a segment of the anti-extrusion ring surrounds at least a portion of the axial segment. The seal ring is axially intermediate the anti-extrusion ring and the radial segment. The radial segment has a face adapted to confront fluid under pressure with the area of the face being greater than the area of the deformable seal which generally faces the fluid under pressure.

3,718,339
WORKPIECE STOP ASSEMBLY FOR CONTRACTING COLLET CHUCKS

Russell H. Dunham; Harry A. Moody, and Don H. Skahen, all of New Fairfield, Conn., assignors to The Dunham Tool Company, Inc., New Fairfield, Conn.

Filed Oct. 16, 1970, Ser. No. 81,397. The portion of the term of this patent subsequent to Aug. 29, 1989, has been disclaimed.
Int. Cl. B23b *31/20*
U.S. Cl. 279—51 **12 Claims**

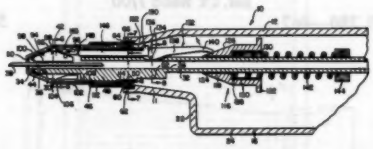


The application discloses a workpiece stop assembly for use in connection with contracting collet chucks. The stop assembly is received internally of the chuck and has a fixed position with respect to the spindle of the lathe or screw machine with which the chuck is associated. When a workpiece is received in the chuck, its inner end is seated against the workpiece stop before the collet chuck is actuated. The collet chuck is closed upon the workpiece by reason of an axial withdrawing movement of the chuck. Normally this can result in an undesirable axial shifting of the workpiece. However, the workpiece is prevented from axial displacement by reason of the workpiece stop, which remains fixed in its position while the chuck moves axially to grip the work. The workpiece stop assembly of the present invention is especially adapted for use in association with collet chucks intended for the gripping of workpieces of smaller diameter.

3,718,340
DRILL CHUCK

James M. Stewart, West Palm Beach, Fla., assignor to Stewart Research, Inc., West Palm Beach, Fla.

Filed Oct. 26, 1971, Ser. No. 192,528
Int. Cl. B23b *31/10*
U.S. Cl. 279—57 **16 Claims**



A drill chuck is provided having a chuck sleeve for controlling the position of a plurality of gripping jaws relative to a rotatable shaft for holding a workpiece and a camming mechanism for applying gripping force to the jaws. The camming mechanism comprises a hollow camming slide mounted on an intermediate portion of the shaft, cam means connected to the shaft forwardly of and engageable with the slide, resilient means for continuously urging the slide toward the forward end of the shaft to engage and actuate the cam means, and transmitting means connecting the jaws with the cam means to force the jaws inwardly and grip the workpiece at the forward end of the shaft upon actuation of the cam means.

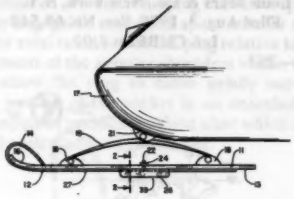
ERRATUM

For Class 280—150 AB see:
Patent No. 3,718,332

3,718,341
SNOWMOBILE ANTI-SKID DEVICE

Russell C. Westberg, 10653 Johnson Road, Minneapolis, Minn.

Filed Sept. 17, 1971, Ser. No. 181,417
Int. Cl. B62b *17/00*
U.S. Cl. 280—28 **4 Claims**

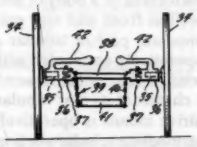


An anti-skid device for a snowmobile ski attached to the wear bar of each of the steering skis of the snowmobile to prevent the ski and snowmobile from sliding sideways in snow or on icy surfaces by preventing a lateral movement of the steering ski when the snowmobile is making a turn.

3,718,342
AMUSEMENT VEHICLE

Roy F. Freed, 3825 Airport Road, El Paso County, Colo.

Filed Nov. 13, 1970, Ser. No. 89,285
Int. Cl. B62k *9/11*
U.S. Cl. 280—87.01 **1 Claim**



The present invention relates generally to an amusement oriented vehicle comprising a pair of parallel spaced-apart wheels interconnected by a spindle about which the wheels rotate as an axis and including seat means carried by the spindle, said seat means being disposed between the two wheels and adapted to seat and carry a person.

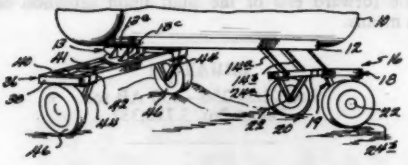
3,718,343
AMMONIA TRAILER IMPROVEMENTS

Franky D. Mills, Plainview, Tex., assignor to The Hamby Company, Plainview, Tex.

Filed Apr. 14, 1971, Ser. No. 134,019
Int. Cl. B62d *53/08*
U.S. Cl. 280—116 **3 Claims**

The front wheels of a trailer are carried by a rigid frame which is attached to the front end of the trailer frame by a fifth wheel unit which permits steering move-

ment of the front wheel frame relative to the trailer frame. The front wheel frame is pivotable relative to the



fifth wheel unit for tilting movement about an axis which is parallel to the direction of front wheel travel.

3,718,344

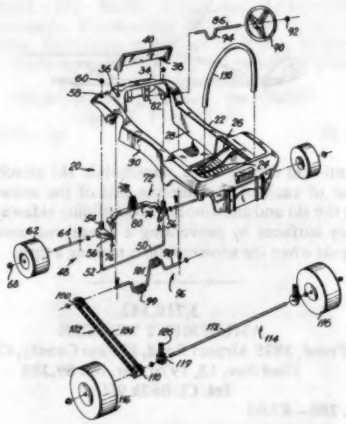
OCCUPANT-PROPELLED VEHICLE

Raymond J. Lohr, and Calvin S. Cook, both of Erie, Pa., assignors to Louis Marx & Co., New York, N.Y.

Filed Aug. 3, 1970, Ser. No. 60,540

Int. Cl. B62m *1/02*

U.S. Cl. 280—261 **7 Claims**



A miniature occupant-propelled surface vehicle. The vehicle includes a chassis formed of a body of sheet material which includes a seat as well as front and rear pairs of tubular portions and an intermediate pair of tubular portions. A front wheel assembly is operatively connected with the chassis at its front tubular portions, a rear wheel assembly is operatively connected with the chassis at its rear tubular portions, and an operator-actuated drive means is operatively connected with the chassis at its intermediate tubular portions. A transmission extends from the operator-actuated drive means to the rear wheel assembly for rotating the latter, and this transmission is situated at an elevation at least as high as the seat of the chassis. The chassis has an inner side wall portion extending upwardly from the seat at one side thereof and an outer side wall portion which is spaced from this inner side wall portion to define therewith a space through which the transmission extends to the rear wheel assembly.

3,718,345

STABILIZING APPARATUS

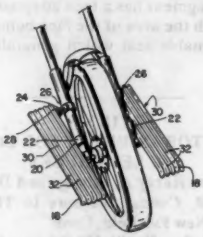
Robert D. Bringman, 18600 Burbank Boulevard, Apt. 204, Tarzana, Calif.

Filed Dec. 28, 1970, Ser. No. 101,689

Int. Cl. B62h *7/00*

U.S. Cl. 280—289 **15 Claims**

Stabilizing apparatus for the front end of a motorcycle has a pair of forwardly declining fins adjustably attached to the front forks. In another embodiment, a single fin is supported over and spaced from the front wheel. Pressure of relative



wind on the fins produces downward force on the forks which tends to hold down the front end of a motorcycle.

3,718,346

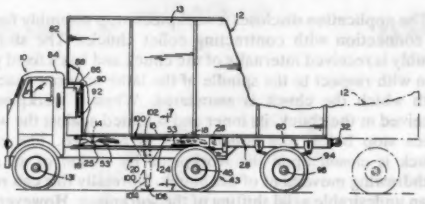
TRUCK COMPRISING TRACTOR AND SEMI-TRAILER

Kenneth W. Self; Norman B. Chew, both of Lake Oswego, Oreg., and Bill I. Twyman, Vancouver, Wash., assignors to Freightliner Corporation, Portland, Oreg.

Filed Aug. 27, 1970, Ser. No. 67,398

Int. Cl. B62d *53/00*

U.S. Cl. 280—415 B **11 Claims**



A vehicular assembly comprising a tractor and a semitrailer so detachably coupled together that they act as a unit, wherein the assembly has three zones of support, one of which is provided by a zero rate suspension means and the other two of which are provided by variable rate suspension means, whereby to maintain reasonably constant a desired pattern of load distribution between the three zones.

3,718,347

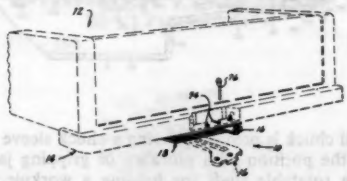
ADJUSTABLE SWING HITCH FOR VEHICLES

Frederick W. Mann, Waterville, Kans.

Filed Nov. 16, 1970, Ser. No. 89,858

Int. Cl. B60d *1/00*

U.S. Cl. 280—467 **5 Claims**



A hitch for vehicles includes a mounting and a hitch pivotal, extendable and translatable relative the mounting. A resilient lock secures the hitch. More particularly the hitch is adapted to mount on the rear of a vehicle with a hitch that is adapted to be translatably positionable on the mounting, and adapted to

be rotatably and extendably positionable therefrom to be coupled with a trailer vehicle, or the like, then retracted to a locked position.

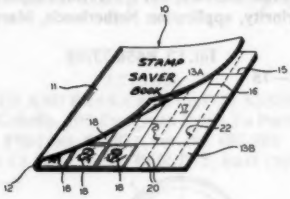
ERRATUM

For Class 280—47.26 see:
Patent No. 3,718,337

3,718,348
TRADING STAMP SAVER BOOKS

Joseph V. Bellanca, Tallahassee, Fla., assignor to McCain Manufacturing Corp., Chicago, Ill.

Filed April 1, 1971, Ser. No. 130,408
Int. Cl. B42d *15/00*
U.S. Cl. 283—8 3 Claims

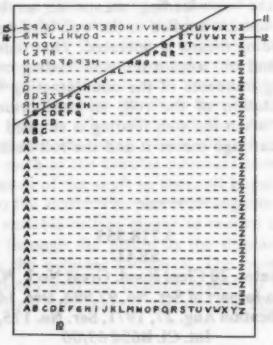


A trading stamp saver book is characterized by a cover and folded signatures joined by glue. The signatures afford interior pages having spaces for the stamps. The pages are weakened by scores, whereby removal of the cover or a signature visibly mars the book and whereby the pages may be rent along the score lines at the redemption center to so mutilate the book and its contents as to prevent swindle.

3,718,349
CIPHER DEVICE AND METHOD

Albert W. Small, 5803 Greentree Road, Bethesda, Md. 20014

Filed Apr. 6, 1954, Ser. No. 421,459
Int. Cl. G09c *1/02, 5/00*
U.S. Cl. 283—17 4 Claims

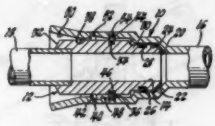


1. A cipher device comprising a sheet having obverse and reverse surfaces, a plurality of plain text alphabets comprising characters on one surface thereof and a plurality of cipher test alphabets comprising characters on the other surface thereof each character of each alphabet on said one surface having a substantially registering character of an alphabet on said other surface.

3,718,350
SNAP RING COUPLING

Lee F. Klein, North Tonawanda, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 27, 1971, Ser. No. 183,964
Int. Cl. F16l *21/00*
U.S. Cl. 285—39 4 Claims

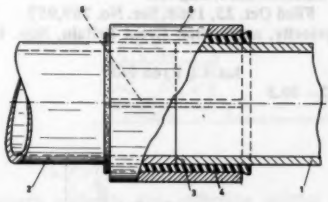


A quick connect, snap ring coupling for conduits for fluids under pressure embodies a socket and plug which is inserted into the socket and which is in sealing relation with the socket when fully inserted therein. The plug carries a split retaining ring which is engagable in spaced apart annular shoulders in the socket for axial retention of the plug relative to the socket. The arrangement of the annular shoulders within the socket is such as to allow the plug to move axially outwardly with respect to a portion of the socket to an unsealed position to bleed the conduit of pressurized fluid after which the plug can be completely released from the socket.

3,718,351
PIPE FITTING

Hermanus Bakkerus, Voorburg, Netherlands, assignor to Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid, Handel en Verkeer, The Hague, Netherlands

Filed Aug. 16, 1971, Ser. No. 171,845
Claims priority, application Netherlands, Aug. 20, 1970, 7012379
Int. Cl. F16l *21/06*
U.S. Cl. 285—236 3 Claims



A pipe joint for connecting abutting ends of cast iron pipes comprising in a flexible sleeve, such as of rubber which is surrounded by one split socket, under stress, in particular out of cast iron, or a material that corresponds with its elasticity and has a resistance against corrosion that is comparable with that of the pipes to be connected.

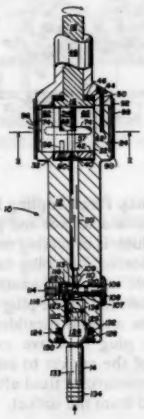
3,718,352
BALL JOINT AIR SUPPLY CONNECTION

Oren Van Northcutt, Point, Tex., assignor to Dal-Air Tool Company, Point, Tex.

Division of Ser. No. 639,767, May 19, 1967, Pat. No. 3,498,186. This application Dec. 8, 1969, Ser. No. 882,904
Int. Cl. F16l *27/04*
U.S. Cl. 285—261 2 Claims

An air motor including an outer casing having a three lobed chamber defined in one end thereof which rotatably receives a cylindrical rotor. Air under pressure is fed through a ball joint

connection inlet into one end of the chamber. Two pairs of perpendicularly disposed vanes are slidably disposed in slots in the rotor and radially extend from the rotor into unoccupied outer portions of the three lobed chamber. The vanes have relieved portions along the sides thereof to provide, along with the slots in the rotor, communication between the air inlet and



the outer portions of the three-lobed chamber. Passage of air under pressure through the air inlet into the outer portions of the chamber acts upon the vanes to cause rotation of the rotor. A valve may be included in the outer casing to vary the passage of air in order to control the rotation speed of the rotor.

3,718,353

SUPPORT ARRANGEMENT

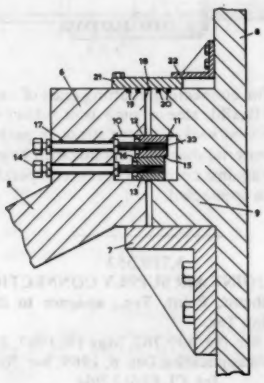
Anthreas Nicholas Charcharos, Whetstone, Leicestershire, England, assignor to British Nuclear Design Construction Limited, Leicestershire, England

Filed Oct. 23, 1968, Ser. No. 769,957

Claims priority, application Great Britain, Nov. 16, 1967, 52,180/67

Int. Cl. F16b *9/00*

U.S. Cl. 287—20.3 **2 Claims**



The invention provides a support arrangement for locating boiler or other service units in vertical bores in the pressure vessel wall of a nuclear reactor. The arrangement comprises two co-operating flanges (6) and (9) provided with grooves (10) and (11) respectively which are brought into alignment. The groove (10) houses pairs of wedge member segments (12), (13), which are moved radially outwardly of their groove by jacking screws (14) to a wedging position. Such an arrangement permits sealing between the unit and bore to be effected from the mouth end of the bore, thus permitting the seal to be readily renewed or serviced.

3,718,354

APPARATUS FOR SECTIONALLY DELIVERING A WEB FROM A STORAGE ROLL

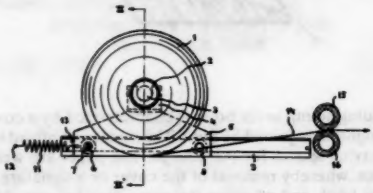
Conrardus Johannes Gerardus Lemmen, Baexem, Netherlands, assignor to O'ce-Vander Grinten N.V. Venlo, Netherlands

Filed March 9, 1971, Ser. No. 122,351

Claims priority, application Netherlands, March 10, 1970, 7003386

Int. Cl. B65h *23/08*

U.S. Cl. 242—75 **6 Claims**



An apparatus for delivering a web intermittently from a web storage roll so that successive sections of the web may be cut into sheets for use as needed is made to enable fast operation without over-tensioning the web at the start or over-accumulating it at the end of a web feeding operation, by providing a carriage on which the roll is rotatably supported and which is displaceable horizontally relative to the web feeding means, as by being mounted through wheels for free movement along horizontal rails, and applying to the carriage, as by springs or a special counterweight system, a force urging it in the direction away from the web-feeding means so as to counteract yieldably the tension applied to the web leading from the roll when the feeding means is operated. That tension displaces the carriage and roll toward the web feeding means until, by accompanying increases of the counteracting force and the unwinding rotation of the roll, an equilibrium position is reached; and when the web feeding is stopped the force applied to the carriage moves it and the roll back to their idle position.

3,718,355

SEAL

Richard S. Canter, 20 Clent Road, Great Neck, N.Y.

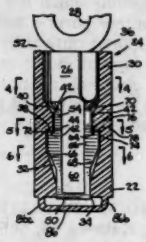
Continuation-in-part of Ser. No. 97,894, Dec. 14, 1970. This application Aug. 27, 1971, Ser. No. 175,669

Int. Cl. B65d *63/00*

U.S. Cl. 292—321 **16 Claims**

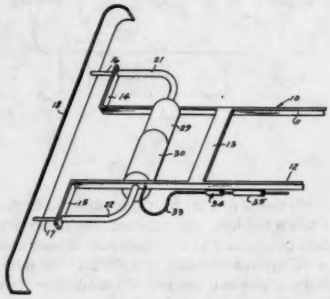
A tamper-proof seal comprising a strap-like body portion generally having sealing means at the ends of the body portion so that the body portion can be placed through a hasp or other locking means to provide a locking element. The body portion is then looped around and fastened by the sealing means at each end thereof to make a permanent tamper-proof seal. The sealing means comprises a socket portion and a plug portion having a frame construction. There is a lateral locking surface

in each portion which provides a permanent seal, and there is provision by means of a resilient coupling to make the seal by



deforming the lateral locking surface of the plug within the plug frame.

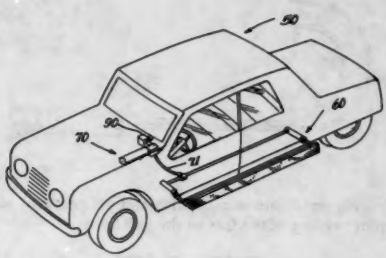
3,718,356
BUMPER AND BRAKE ACTUATOR ASSEMBLY
Aristides A. Gabella, 103 Evergreen Drive, La Porte, Ind.
Filed Oct. 6, 1971, Ser. No. 186,866
Int. Cl. B60r *19/02*; **B60t** *7/12*; **B61f** *19/04*
U.S. Cl. 293—5 **8 Claims**



An impact absorbing bumper assembly in which a bumper is combined with a cylinder which is arranged to be secured to the chassis of a vehicle, the cylinder having a piston arranged to reciprocate therein. One shaft is secured to one end of the cylinder and a second shaft is secured to the piston. A pair of tubular members is provided, each having right angle bends therein. One of the tubular members receives the free end of the one shaft and the other of the tubular members receives the free end of the other shaft. A plurality of discrete balls is positioned in each of the tubular members between the rods and the free ends of the shaft to transmit impact forces from the bumper to the shafts. The piston arrangement is such that it includes a variable orifice means to reduce the amount of fluid passing through the piston as the displacement of the piston within the cylinder increases. The bumper assembly may be combined with the braking system of the vehicle to apply pressurized fluid thereto and thereby apply the brakes upon impact.

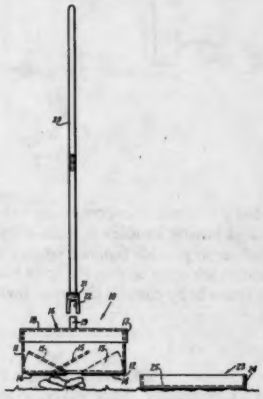
3,718,357
RETRACTABLE SIDE BUMPER GUARD
Adelbert F. Hertzell, 5024 Lee Street, Skokie, Ill.
Filed Oct. 26, 1971, Ser. No. 192,233
Int. Cl. B60r *19/04*, *21/02*; **B61f** *19/04*
U.S. Cl. 293—9 **3 Claims**

A bumper guard assembly apparatus to be attached to an automobile comprising a bumper guard and means to move the bumper guard in one direction when the apparatus is in use and in an opposite direction when the apparatus is not in



use, whereby the same need not be completely detached from the automobile at any time.

3,718,358
SANITARY COLLECTOR
Thaddeus Ayers, 11 Franklin St., Elmont, N.Y. 11003
Filed Jan. 25, 1972, Ser. No. 220,578
Int. Cl. A47f *13/06*
U.S. Cl. 294—19 R **5 Claims**

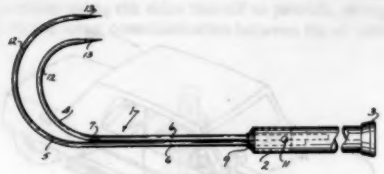


A sanitary collector for gathering animal excrement into a disposable container to permit it to be discarded. The disposable container is provided with vanes having projecting scraping edges for scraping the excrement from the ground or other surface upon revolving of the container. A detachable handle is provided for operating the container and a bottom cover is provided for closing the container with the excrement therein prior to disposing of the container.

3,718,359
GAFF HOOK
James W. Omdoll, Jr., P.O. Box 93, Palmyra, Wis.
Filed Nov. 30, 1970, Ser. No. 93,580
Int. Cl. B65g *7/12*
U.S. Cl. 294—26 **2 Claims**

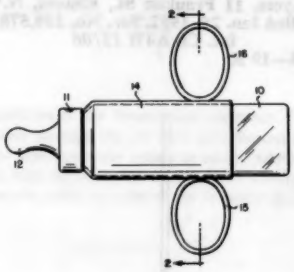
A gaff hook including a pair of tines with the tines having generally straight shanks which are secured together and mounted within a hollow sealed handle. The outer end of each tine is curved and terminates in a pointed tip. The curved ends of the tines lie in a common plane and the radius of curvature

of one tine is different from that of the other tine so that the pointed tips are in spaced parallel relation, which enables the



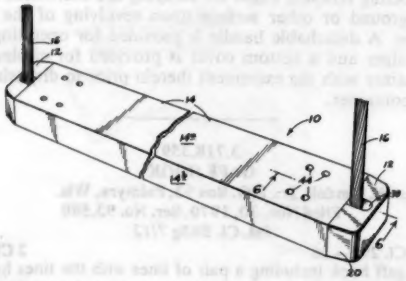
tips to easily penetrate into the fish and yet provides stability to prevent twisting of the fish on the gaff hook.

3,718,360
BABY BOTTLE HOLDER
Frances M. Knutzen, Rt. 1, Box 1800, Port Richey, Fla.
Filed March 15, 1971, Ser. No. 124,223
Int. Cl. B61j 9/06
U.S. Cl. 294—27 H **2 Claims**



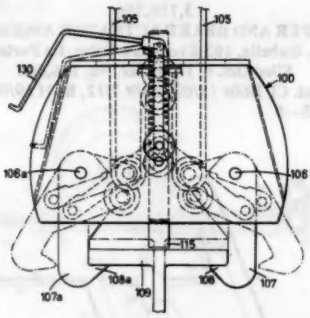
This baby bottle holder comprises a sleeve in which the bottle fits, and having handles at both sides adjacent the bottom of the holder to provide balance when a bottle is in the holder. The handles are open to provide grips but the openings are not so large that a baby can slip its hands therethrough.

3,718,361
BEAM END CAP
Eugene M. Marcotte, Vancouver, Wash., assignor to West Coast Rope and Rigging of Portland, Inc., Portland, Oreg.
Filed June 11, 1971, Ser. No. 152,151
Int. Cl. B66c 1/16
U.S. Cl. 294—67 E **5 Claims**



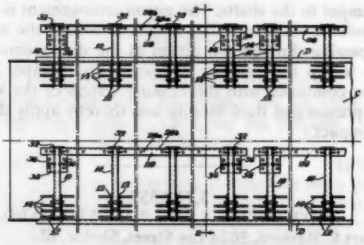
An end cap for a load-handling device including an elongated beam and a cable extending along the underside of the beam and out from an end of the beam. The end cap secures the cable and protects the end of the beam. The cap includes a block member secured to the beam having one portion which fits against the underside of the beam and another portion which covers the end of the beam and is disposed outwardly therefrom. A cable-receiving groove is formed in the top of the block member and a rounded clamping member overlies the groove to clamp a cable in the groove and to train such cable in an arc around the end of the beam.

3,718,362
HOIST APPARATUS
Erich Dagobert Butz, Kahlweg 46, 605 Offenbach am Main, Germany
Filed May 26, 1970, Ser. No. 40,572
Int. Cl. B66c 1/64
U.S. Cl. 294—112 **11 Claims**



Invention relates to a lift hoist including automatically closing claws when the load is contacted, the claws are pivoted on a base plate connected to a suspension device and co-operating with a differential device, said differential device being attached to the claws and operatively associated to a displaceable piston contacting the load.

3,718,363
MODULAR HOME RACK FOR VEHICLES
Barry E. Dupre, Lansing, Ill., assignor to North American Car Corporation
Filed July 2, 1971, Ser. No. 159,218
Int. Cl. B60p 1/00
U.S. Cl. 296—14 **8 Claims**



A plurality of laterally extensible-contractible load supporting rack assemblies, positioned along each of the longitu-

dinally marginal portions of a deck of a vehicle. The assemblies being arranged in sets or groups and each group being movable as a unit and the groups being adapted in extended position to project a substantial distance laterally of the vehicle and adapted to support one or more modular building units thereon for transporting the same.

3,718,364

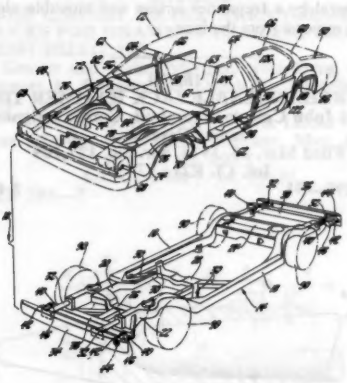
VEHICLE BODY AND FRAME CONSTRUCTION

Raymond G. Fischer, Birmingham; Marvin H. Henckel, Farmington; Walter V. Corteg, Utica, and Gerald E. Frig, Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 26, 1971, Ser. No. 192,046

Int. Cl. B62d *21/00*

U.S. Cl. 296—28 R **3 Claims**



An improved frame and body construction for an automobile type vehicle including a frame having a pair of longitudinal horns adapted for energy absorbing deformation, a body front sheet metal portion adapted for energy absorbing collapse, a rigid cowl structure rearward of the front sheet metal portion, a pair of side door impact beams having substantial column rigidity pivotally supported on respective ones of the cowl and a center pillar of the body, and a rear sheet metal portion of the body defining a structurally rigid unit rearward of the passenger compartment. In a relatively high speed collision situation the impact forces on the vehicle are divided between the frame and the sheet metal in a predetermined proportion and distributed above and below the vehicle center of gravity to suppress pitching, the forces on the sheet metal being transferred to the cowl and by the impact beams to the rear sheet metal portion thereby to prevent rearward displacement of the cowl into the passenger compartment.

3,718,365

SEAT ATTACHMENT FOR BOATS

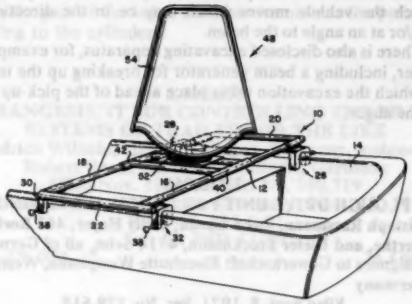
Curtis E. Gibson, Rte. 6, Box 446, Natchez, Miss. 39120

Filed Mar. 17, 1971, Ser. No. 125,180

Int. Cl. A47c *1/00*

U.S. Cl. 297—349 **4 Claims**

A seat attachment for boats which includes a rectangular, tubular main frame having clamp means for detachably securing the frame to the sides of the boat. A sub-frame carrying a seat is sleevedly engaged with opposed



sides of the tubular main frame to permit sliding adjustment of the sub-frame longitudinally of the main frame.

3,718,366

METHOD FOR CREATING PERMEABILITY IN SULFUR DEPOSITS

William L. Hill, Richardson, Tex., assignor to Continental Oil Company, Ponca City, Okla.

Filed Oct. 7, 1970, Ser. No. 78,977

Int. Cl. E21b *43/26, 43/28*

U.S. Cl. 299—4 **5 Claims**

Permeability of a subterranean sulfur containing formation is increased and production of sulfur by underground fusion mining of sulfur (wherein hot water is injected into the sulfur containing formation, molten sulfur is produced from a lower level, and excess water is removed through an outlying bleed well) is improved according to the method of this invention by fracturing between a production well and a water bleed well, injecting a fluid explosive into the fracture, and detonating the explosive.

3,718,367

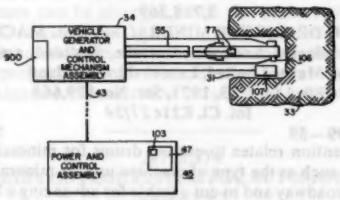
CORPUSCULAR BEAM IN MINING AND EXCAVATION

Berthold W. Schumacher, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 6, 1970, Ser. No. 87,474

Int. Cl. E21c *37/18*

U.S. Cl. 299—14 **7 Claims**



There is disclosed a method and apparatus for mining and excavating through rocky terrain without a mechanical tool or machine which must be made rugged enough to withstand the forces and impacts necessary to break rocks. The excavation is carried out with an electron beam which is projected against the rock. The beam is conducted from a generator through a

long tube, which may be 20 feet long or more, and is emitted at the end of the tube. The generator and tube may be mounted on the turret of a vehicle so that the tube can swing in an arc of large angle in the plane of a rocky seam or at any angle transverse to this plane. The beam bores an opening in which the vehicle moves which may be in the direction of and/or at an angle to the beam.

There is also disclosed excavating apparatus, for example an auger, including a beam generator for breaking up the terrain in which the excavation takes place ahead of the pick-up edge of the auger.

3,718,368

PLOUGH DRIVE UNIT FOR LONGWALL MINING

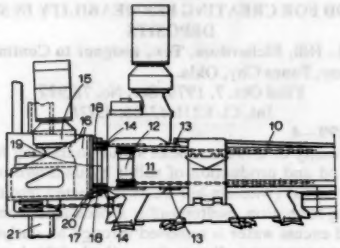
Christoph Rassmann, 4628 Lunen; Willy Heyer, 463 Bochum-Gerthe, and Dieter Stuckmann, 4714 Selm, all of Germany, assignors to Gewerkschaft Eisenhutte Westphalia, Westfalia, Germany

Filed Sept. 8, 1971, Ser. No. 178,615

Claims priority, application Germany, Nov. 14, 1970, G 70 42 204.7

Int. Cl. E21c *27/35*

U.S. Cl. 299—34 **5 Claims**



A mineral mining installation with a scraper chain conveyor guiding a plough alongside a mineral face. The conveyor has a drive station at one end having a frame with side wall members accommodating a drive drum for the chains of the conveyor. The side wall members are received between apertured vertical webs forming part of a further frame supporting the plough drive means. The side wall members and the webs are detachably interconnected with bolts. The further frame is generally L-shaped with a vertical wall adjoining the webs and a horizontal wall bearing the plough drive means and being slidably guided on a bracing beam.

3,718,369

CUTTING DRUMS FOR MINERAL MINING MACHINES

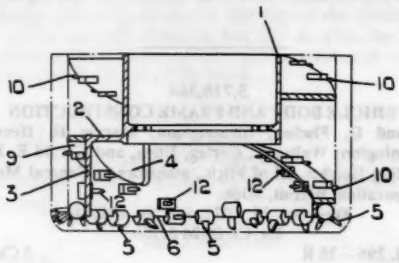
Forrest Symington Anderson, Carluke, Scotland, assignor to Anderson Mavor Limited, Lanarkshire, Scotland

Filed Sept. 13, 1971, Ser. No. 179,663

Int. Cl. E21c *27/24*

U.S. Cl. 299—59 **5 Claims**

The invention relates to cutting drums for mineral mining machines, such as the type of machine used in mineral mining to drive a roadway and to cut a stable for advancing a longwall face. The drum which is mounted on a mineral mining machine for rotation on an axis normal to the direction of movement of the machine along a mineral face comprises a hub portion and a hollow cylindrical portion extending from a flange on the end of the hub portion, the cylindrical portion having cutting picks mounted around the free end portion thereof and series of cutter picks mounted in the form of at least one helix internally of the cylindrical portion which forms a trepanner cutter and at least one helical flange with cutting picks thereon extending radially from the free end of the cylindrical portion to the opposite end of the hub portion. The drum is movable in an arc from a lowered position to a



raised position and movable into the mineral face to cut a circle of mineral by a trepanner action and movable along the face to cut mineral from the face.

3,718,370

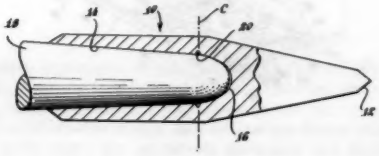
INTERCHANGEABLE JACK HAMMER TIPS

Richard John Caserta, Trumbull, Conn., assignor to James Caserta

Filed Mar. 23, 1971, Ser. No. 127,109

Int. Cl. E21c *37/26*

U.S. Cl. 299—91 **3 Claims**



The life of jack hammer interchangeable tips having smooth wall shank receiving sockets in their upper ends is greatly increased by interrupting the straight line of the inner surface of the wall defining the socket at a point adjacent the lower end of the shank after it has been fully inserted in the socket of a removable tip.

3,718,371

FLUID BEARING TRACK STRUCTURE AND COMPONENTS THEREOF

Cecil A. Lasch, Jr., Cupertino, Calif., assignor to Industrial Modular Systems Corporation, Santa Clara, Calif.

Filed Aug. 25, 1971, Ser. No. 174,808

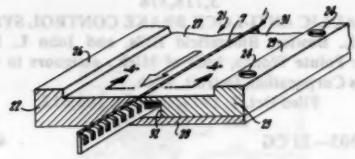
Int. Cl. B65g *53/04*

U.S. Cl. 302—31 **19 Claims**

An improved fluid bearing track structure for supporting and transporting articles on a fluid bearing, components of such track structure, and a method for fabricating such track structure. The track structure includes as a novel component thereof a flexible insert strip having directional fluid passages therein for directing a supporting fluid against an article to be transported over the upper surface of the track structure. The insert strip is frictionally or otherwise held in place in the track structure with its upper edge flush with the upper surface of the track structure so that supporting fluid emanating from the

fluid passages therein may support and move successive articles along the track.

The flexible characteristics of the insert strip permit the track structure to be formed with curved or other non-straight



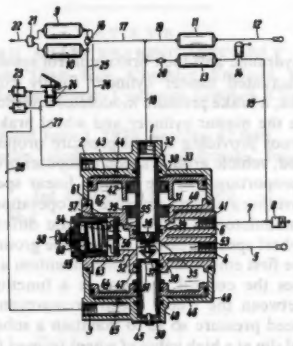
configurations. The track also has bi-directional article movement capability. In its preferred embodiment the insert strip is produced by a chemical etching procedure which allows elongated lengths of insert strips to be inexpensively and accurately produced from various materials.

3,718,372

DOUBLE CIRCUIT BRAKE ARRANGEMENT FOR TRUCKS FOR DRAWING TRAILERS BRAKED BY PRESSURIZED AIR

Hans Gruner and Heinz Nicolay, Heidelberg, Germany, assignors to Graubremse G.m.b.H., Heidelberg, Germany

Filed Mar. 12, 1971, Ser. No. 123,627
Claims priority, application Germany, Mar. 14, 1970, P 20 12 204.7
Int. Cl. B60t *7/20, 13/36*
U.S. Cl. 303—7 **7 Claims**



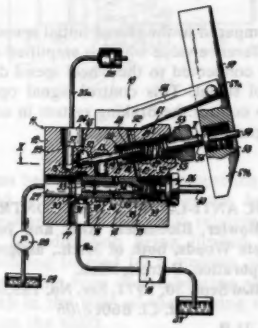
A two-circuit brake arrangement for trucks for drawing of trailers braked by pressurized air, which comprises two brake circuits, and a common pressure safety relay. The two brake circuits are connected with the common pressure safety relay. A common housing is provided and two oppositely operating step piston arrangements are disposed in the common housing. The step piston arrangements have cylinders. A central valve chamber includes a connection for a brake conduit for a trailer. The cylinders extend into the central valve chamber. The step pistons are hollow. One of the step pistons has an inlet seat and the other of the step pistons has an outlet seat within the range of the valve chamber for a spring biased double valve body. The double valve body closes the inlet seat. The step piston carrying the inlet seat defines inner spaces, and the inner space of the step piston carries the inlet seat in communication with a storage air connection. The inner space of the other step piston is in open communication with an airing connection. The cylinders receive the great part of the step piston carrying each a brake circuit connection on the outside of the pistons and are in communication on the other side with the valve chamber by means of a passage. Another spring-biased valve separates the part of the valve chamber receiving the double valve body and the brake conduit connection from the part of the valve chamber terminates the passages leading to the cylinders.

3,718,373

ARRANGEMENT FOR CONTROLLING THE BRAKE SYSTEMS OF TRAILERS OR THE LIKE

Friedrich Wilhelm Höfer, Hofingen, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Nov. 15, 1971, Ser. No. 198,719
Claims priority, application Germany, Nov. 13, 1970, P 20 55 801.4–21
Int. Cl. B65t *13/00*
U.S. Cl. 303—7 **26 Claims**



An arrangement for controlling the brake system of a trailer from the towing vehicle and for simultaneously controlling the flow of a pressurized fluid to one or more consumers utilizes a valve assembly having a housing for a shuttle which is movable between several positions to thereby regulate the flow of pressurized fluid from an inlet to a first outlet for one or more consumers, a second outlet for the hydraulic cylinder or cylinders of the brake system for the trailer, and through a passage wherein a control fluid stream flows from the inlet to a third outlet for recirculation to the source of fluid. The positions of the shuttle can be changed by a pilot valve unit which is controlled by a manually operable lever or by a hydraulic piston which is shiftable in response to changes of fluid pressure in the brake system of the towing vehicle. The rate of flow of pressurized fluid to the consumer or consumers can be changed while the brake system of the trailer is sealed from the inlet, and such flow is reduced or terminated when the brake system of the trailer receives pressurized fluid. The pilot valve unit can establish or terminate communication between the second and third outlets.

3,718,374

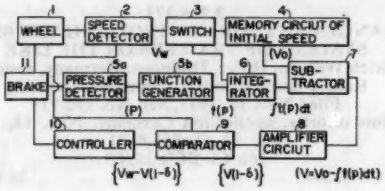
SKID CONTROL SYSTEM FOR AUTOMOTIVE VEHICLES

Takeshi Ochia, Toyota-shi, Aichi-ken, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed June 30, 1970, Ser. No. 51,117
Claims priority, application Japan, July 1, 1969, 44/51477
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 A **5 Claims**

A skid control system for automotive vehicles having hydraulic brakes includes a wheel speed detector and a memory circuit connected to the detector to store the initial

speed of the vehicle at the start of braking. A pressure detecting means is connected to the brake system to detect the fluid pressure during brake application, and a function generator converts the detected pressure into an arbitary function proportional thereto, and which is integrated. The integrated



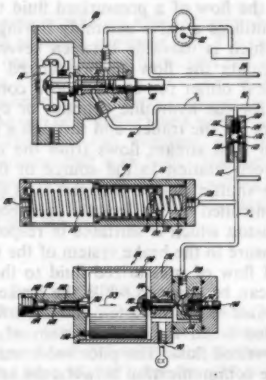
function is compared to the stored initial speed of the vehicle to derive a difference value which is amplified and supplied to a comparator connected to the wheel speed detector to provide a control signal. This control signal operates a servo mechanism to control the braking system in accordance with the control signal.

3,718,375

HYDRAULIC ANTI-LOCK BRAKE CONTROL SYSTEM

Laurence L. Bowler, Bloomfield Hills, and John L. Harned, Grosse Pointe Woods, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 30, 1971, Ser. No. 185,087
Int. Cl. B60t *8/06*
U.S. Cl. 303—21 B **3 Claims**



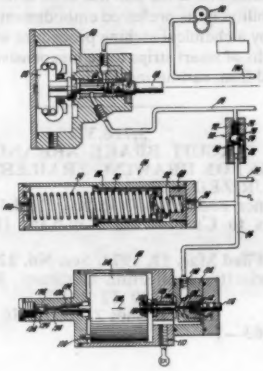
A vehicle brake system includes a master cylinder, a regulating valve which modulates pump generated fluid pressure to provide a regulated pressure proportional to the master cylinder pressure, and a hydraulic actuator which provides a brake pressure proportional to the regulated pressure. The wheel slip condition is sensed by a transmission governor providing a wheel speed proportional pressure and a vehicle ground speed computer providing a vehicle ground speed proportional pressure. A control logic circuit including a hysteresis switching valve, a bypass valve, and a ball check valve functions to modify the regulated pressure in accordance with the difference between wheel speed pressure and vehicle ground speed pressure causing the hydraulic actuator to vary the wheel slip to continuously seek out the peak value of wheel-to-road friction coefficient.

3,718,376

HYDRAULIC ANTI-LOCK BRAKE CONTROL SYSTEM

Lauren L. Bowler, Bloomfield Hills, and John L. Harned, Grosse Pointe Woods, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 1, 1971, Ser. No. 185,512
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 CG **4 Claims**



An all hydraulic anti-lock brake control system includes an operator actuated master cylinder fluidly connected to a wheel brake, a brake pressure modulator interposed fluidly intermediate the master cylinder and wheel brake, a transmission governor providing a fluid pressure proportional to the wheel speed, vehicle ground speed computer providing a fluid pressure proportional to the vehicle linear speed and valve means providing a control pressure for operation of the brake pressure modulator as a function of the difference existing between wheel speed pressure and vehicle ground speed pressure. In the first embodiment of the invention a servo control valve varies the control pressure as a function of the difference between the wheel speed pressure and the vehicle ground speed pressure so as to maintain a substantially constant wheel slip at a high value of wheel-to-road friction coefficient. The second and third embodiments vary the control pressure so as to continuously seek out the peak value of wheel-to-road friction coefficient and thereby maintain a high average coefficient. The second embodiment includes a hysteresis switching valve in combination with the servo control valve while the third embodiment employs a hysteresis switching valve.

3,718,377

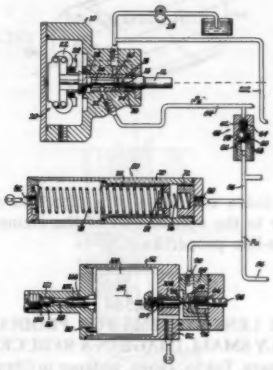
HYDRAULIC VEHICLE GROUND SPEED COMPUTER

John L. Harned, Grosse Pointe Woods, and Laird E. Johnston, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 30, 1971, Ser. No. 185,086
Int. Cl. B60t *8/06*
U.S. Cl. 303—21 CG **4 Claims**

A vehicle ground speed computer provides a hydraulic pressure signal proportional to the vehicle speed relative to the ground and includes a transmission governor or equivalent means providing a source of hydraulic pressure proportional to the vehicle wheel speed, an accumulator which is charged

by the wheel speed pressure source, a flow responsive valve which isolates the accumulator from the wheel speed pressure source whenever the flow therethrough from the accumulator to the wheel speed pressure source is indicative of a wheel deceleration rate in excess of a predetermined value, and a



decelerometer actuated valve which exhausts pressure from the accumulator in proportion to the vehicle linear deceleration whereby the pressure remaining in the accumulator is proportional to the vehicle ground speed irrespective of wheel slip caused by excessive braking.

3,718,378

TAIL-SHAFT BEARING ASSEMBLY

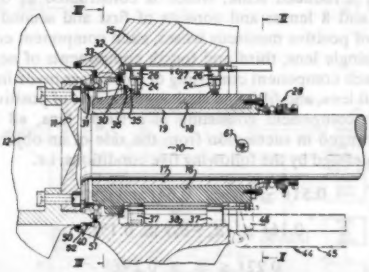
John Armstrong Clay, Sale, Cheshire, England, assignor to Turnbull Marine Design Company Limited, Cheshire, England

Filed June 1, 1970, Ser. No. 42,049

Claims priority, application Great Britain, June 5, 1969, 28,606/69

Int. Cl. F16c *33/74, 35/02*

U.S. Cl. 308—36.1 **13 Claims**



In a propeller shaft bearing arrangement having a split bearing extending through an opening in the stern frame of a ship, one part of the bearing being removable while the ship is afloat and a seal being provided for preventing the entry of water through the opening, there is provided the improvement that the other part of the bearing may be adjusted in position or removed while the ship is afloat. An inflatable seal is provided for preventing the entry of water during the removal of the other part of the bearing. Jacks, rollers and a drive mechanism are provided for facilitating the removal of the other part, and taper wedges for securing the other part in its normal position.

3,718,379

AIR BEARINGS

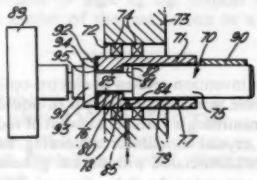
Raymond Williams and Robert Edwin Leckenby, Appleton, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Mar. 9, 1971, Ser. No. 122,341

Claims priority, application Great Britain, Jan. 1, 1971, 133/71

Int. Cl. F16c *17/16*

U.S. Cl. 308—9 **5 Claims**



A journal gas bearing assembly comprising a fixed bearing sleeve and a shaft rotatable in the bearing sleeve longitudinal movement of the shaft relative to the bearing sleeve in one direction being limited by a hydrostatic thrust bearing formed by a cushion of gas trapped under pressure in the bore of the bearing sleeve between an internal step in the bore of the bearing sleeve and an external step on the shaft.

3,718,380

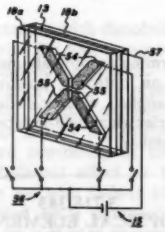
IMAGING SYSTEM IN WHICH EITHER A LIQUID CRYSTALLINE MATERIAL OR AN ELECTRODE IS SHAPED IN AN IMAGE CONFIGURATION

Joseph J. Wysocki; James E. Adams, both of Webster; James H. Becker, Penfield; Robert W. Madrid, Macedon, and Werner E. Haas, Webster, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 821,565, May 5, 1969, Pat. No. 3,652,148. This application Aug. 5, 1971, Ser. No. 169,465

Int. Cl. G02f *1/16*

U.S. Cl. 350—160 LC **14 Claims**



A system transforming an optically negative liquid crystalline substance to an optically positive liquid crystalline mesophase by an applied electrical field, and an imaging system wherein the electrical field-induced transition images a liquid crystalline member.

3,718,381

LIQUID CRYSTAL ELECTRO-OPTICAL MODULATORS

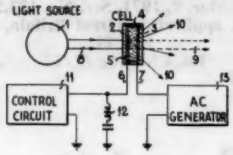
Georges J. Assouline; Michel Hareng, and Eugene Leiba, all of Paris, France, assignors to Thomson-CSF, France

Filed March 12, 1971, Ser. No. 123,583

Claims priority, application France, March 17, 1970, 7009518

Int. Cl. G02f 1/28

U.S. Cl. 350—160 LC **8 Claims**



The present invention relates to electro-optical modulators wherein dynamic scattering of a layer of liquid crystal is controlled for transmitting a variable amount of radiant energy.

The liquid crystal modulator according to the invention comprises a cell associated with an a.c. generator. Under the action of this generator the delay time of the cell is reduced without introducing any misalignment of the liquid crystal molecules in the absence of an electrical control signal.

3,718,382

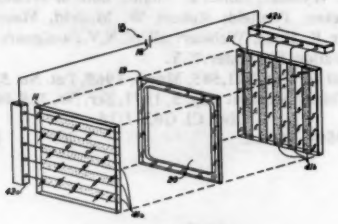
LIQUID CRYSTAL IMAGING SYSTEM IN WHICH AN ELECTRICAL FIELD IS CREATED BY AN X-Y ADDRESS SYSTEM

Joseph J. Wysocki; James E. Adams, both of Webster; James H. Becker, Penfield; Robert W. Madrid, Macedon, and Werner E. Haas, Webster, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 821,565, May 5, 1969, Pat. No. 3,652,148. This application Aug. 5, 1971, Ser. No. 169,457

Int. Cl. G02f 11/16

U.S. Cl. 350—160 LC **2 Claims**



A system transforming an optically negative liquid crystalline substance to an optically positive liquid crystalline mesophase by an applied electrical field, and an imaging system wherein the electrical field-induced transition images a liquid crystalline member.

3,718,383

PLASTIC OPTICAL ELEMENT HAVING REFRACTIVE INDEX GRADIENT

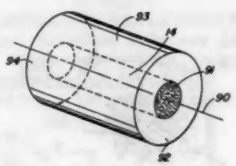
Robert S. Moore, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 19, 1971, Ser. No. 134,995

Int. Cl. G02b 1/04, 5/14

U.S. Cl. 350—175 GN **20 Claims**

The invention relates to a transparent element for the deflection of incident electromagnetic radiation having an optical axis extending therethrough. The element includes a shaped polymeric matrix having an organic diluent therewithin, the diluent forming a continuous gradient



in refractive index extending in a direction substantially perpendicular to the optical axis of the element. The element has lens-like properties.

3,718,384

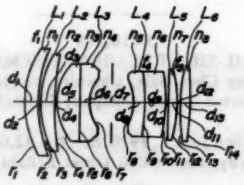
ACCURATE LENS SYSTEMS FOR PRODUCING AN EXTREMELY SMALL IMAGE IN A REDUCED SCALE

Masaki Maisubara, Tokyo, Japan, assignor to Olympus Optical Company Limited, Shibuya-ku, Tokyo, Japan

Filed March 17, 1972, Ser. No. 235,743

Int. Cl. G02b 9/62

U.S. Cl. 350—215 **3 Claims**



An accurate lens system for producing an extremely small image in a reduced scale, which is constructed as 6 components and 8 lenses and consists of first and second components of positive meniscus lenses, each component consisting of a single lens, third and fourth components of negative lenses, each component consisting of two lenses made integral into a unit lens, and fifth and sixth components of positive lenses, each component consisting of a single lens, all lenses being arranged in succession from the side of an object, and which is defined by the following five conditions, i.e.

$$0.51f \leqq f_4 \leqq 0.64f \text{ and } f_4 < 0; \quad \text{(I)}$$

$$0.16f \leqq (d_8 + d_9) \leqq 0.19f; \quad \text{(II)}$$

$$0.22f \leqq d_7 \leqq 0.29f; \quad \text{(III)}$$

$$0.19 \leqq (r_7 + r_8)/2) \leqq 0.24f; \text{ and} \quad \text{(IV)}$$

$$0.64f \leqq f_5 \leqq 0.8f \quad \text{(V)}$$

where $r_1, r_2, \ldots r_{14}$ are radii of curvatures of the successive lens faces counted from an object, $d_1, d, \ldots d_{13}$ are air spaces between the successive lenses or axial thicknesses of the successive lenses, $f_1, f_2, \ldots f_8$ are focal lengths of the successive lenses, and f is a composite focal length of the total lens system.

3,718,385

APPARATUS FOR MOUNTING AN OPTICAL CORRECTION MEMBER IN A HOUSING

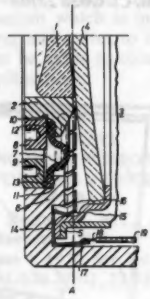
Gunter Preil, Wedel/Hostein, and Herbert Baersch, Hamburg, both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed July 21, 1971, Ser. No. 164,674

Claims priority, application Germany, July 24, 1970, P 20 36 789.9

Int. Cl. G02b 7/02

U.S. Cl. 350—252 6 Claims



Apparatus for automatically adjusting a correction lens for an image processing tube of a viewing instrument in which the lens is axially aligned with a photocathode of the tube, including a resilient diaphragm which is mounted in a prestressed condition to thereby urge the lens toward the photocathode while automatically maintaining the axial alignment between the lens and the photocathode.

3,718,386

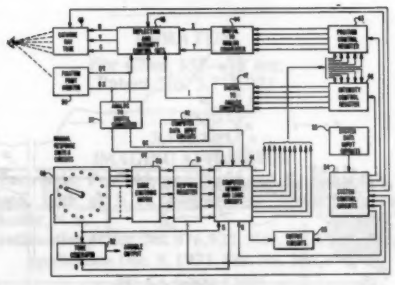
AUTOMATIC VISUAL FIELD EXAMINATION INCLUDING FIXATION MONITORING AND COMPENSATION

John R. Lynn, 10001 Preston Road, Dallas, Tex. 75230, and George W. Tate, Jr., 19523 Dennis Lane, Farmers Branch, Tex. 75234

Filed Sept. 17, 1971, Ser. No. 181,538

Int. Cl. A61b 3/00

U.S. Cl. 351—39 27 Claims



An illustrative embodiment of the present invention includes method and apparatus for determining the threshold value of visual stimuli presented at selected locations in the visual field of a subject. A programmed automatic data processing system is utilized together with a subject response device in a unique two-way feedback system to select location, brightness and spot size of stimuli (spots of light) to be presented and to present these stimuli on a test screen at locations which are unpredictable to the subject, with the term stimuli including test spots which are perceived and those which are not perceived. The subject communicates with the data processing equipment via the subject response device and the system interprets the responses to alter the stimulus presentation regime dynamically while communicating feedback to the subject of correct or incorrect perception of each stimulus. Eye movement of the subject is monitored and compensated for in the presentation of the spots of light by other system apparatus which also communicates with the data processing equipment to center the test field relative to the direction of gaze of the subject which is not necessarily the center of the test screen or a fixed point.

3,718,387

MOTION PICTURE CAMERA WITH DISSOLVING SHUTTER

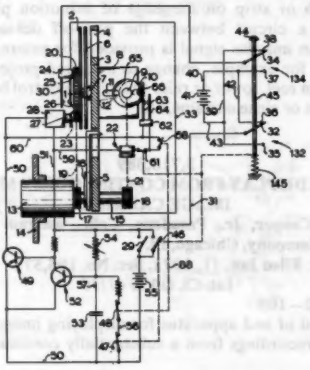
Albert Stieringer, Well der Stadt, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart-Unterturkheim, Germany

Filed July 26, 1971, Ser. No. 164,873

Claims priority, application Germany, Aug. 1, 1970, P 20 38 337.3

Int. Cl. G03b 21/36

U.S. Cl. 352—91 10 Claims



A motion picture camera with dissolving shutter wherein the motor of the drive for film transport is automatically arrested by a compact electronic switching device which arrests the motor with a predetermined delay following the start of making exposures with fade-out effect and which also arrests the motor with the same delay upon completed rewinding of film frames which were exposed with fade-out effect so that such frames can be exposed again but with fade-in effect. The switching device is controlled by a compact electronic timer which is adjustable and is started in response to the start of making exposures with fade-out effect and in response to starting of the motor for the purpose of transporting the once-exposed film frames rearwardly. The switching device is a transistor which is connected directly into the motor circuit or controls an electromagnet which in turn controls an interrupter switch in the motor circuit.

3,718,388

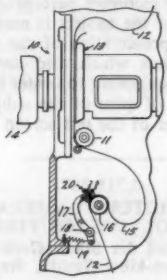
PICK-OFF DEVICE

Angelo Boudouris, Sylvania, and Harold M. Plumadore, Toledo, both of Ohio, assignors to Eprad Incorporated, Toledo, Ohio

Continuation-in-part of Ser. No. 873,394, Nov. 3, 1969, Pat. No. 3,639,046. This application Dec. 20, 1971, Ser. No. 209,601

Int. Cl. G03b *21/50*

U.S. Cl. 352—92 **9 Claims**



A universal pick-off device for a motion picture projector which can be substituted directly for a back-up roller associated with a driven sprocket in the projector. The pick-off device can be installed without modification in almost any commercial projector. Adjustment apparatus is provided for aligning the pick-off device with the sprocket. When a conducting tab or strip on the edge of a motion picture film completes a circuit between the pick-off device and the sprocket, an impulse signal is provided for external controls which can, for example, change to a second projector at the end of a film reel, lower or raise the lights, control background music, open or close curtains, etc.

3,718,389

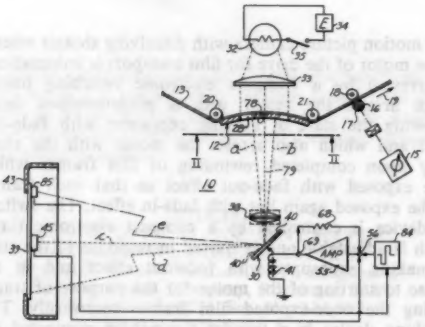
IMAGE DISPLAY FROM CONTINUOUSLY MOVING IMAGE CARRIER

Dexter P. Cooper, Jr., Pasadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jan. 11, 1971, Ser. No. 105,571

Int. Cl. G03b *41/10*

U.S. Cl. 352—109 **37 Claims**



A method of and apparatus for displaying images of a succession of recordings from a substantially continuously moving carrier operates with an optical compensator of a type being repeatedly advanced and being reset between successive advancements. Each image is displayed by way of the compensator and the compensator is advanced during the display of each image to compensate for the continuous carrier movement. The time for resetting of the compensator is determined by sensing extreme advanced position of the compensator. The compensator is then reset in response to each sensing of an extreme advanced position.

3,718,390

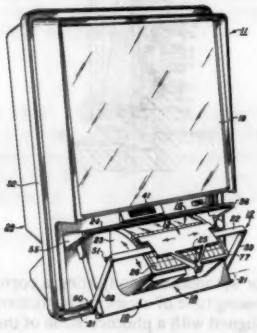
MICROFICHE INDEXER

Robert G. Holliday, Ann Arbor, Mich., assignor to Xerox Corporation, Rochester, N.Y.

Filed June 19, 1970, Ser. No. 47,848

Int. Cl. G03b *23/08*

U.S. Cl. 353—27 **12 Claims**



A microfiche containing a plurality of microimages is positioned relative to the imaging station of a microimage display device by a pivoted member journaled for rotation and a sliding traversing member.

3,718,391

MICROFILM READING APPARATUS

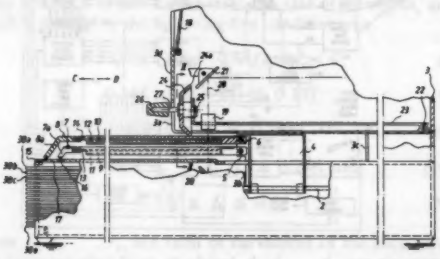
Josef Pfeifer and Kasimir Ambraschka, Unterhaching, and Adolf Koopmann, Wilfried Hofmann, Karl-Heinz Dietrich, and Walter Rauffer, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Munich, Germany

Filed Mar. 28, 1972, Ser. No. 238,762

Claims priority, application Germany, Mar. 29, 1971, P 21 15 205.6

Int. Cl. G03b *3/00*

U.S. Cl. 353—101 **13 Claims**



A microfilm reader wherein discrete microfilm sheets are removably received in holders having transparent top

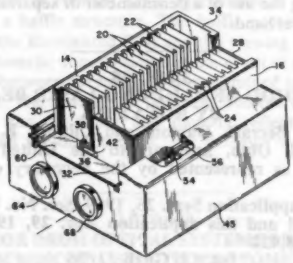
panels and movable forwardly and rearwardly as well as sideways within the confines of a housing to place selected portions of microfilm sheets into register with a projection lens. The lens is mounted at the free end of a lever which is pivotable in the housing and further carries a block- or roller-shaped follower which rests on the top panel of the selected holder. That surface of the follower which abuts against the adjacent top panel is dimensioned and configurated in such a way that it can simultaneously abut against two adjacent top panels during shifting of one or more holders in order to place a selected portion of a selected microfilm sheet into register with the lens. This reduces the likelihood of shocks to the lens. The distance between the lens and the nearest microfilm sheet is adjustable by a mechanism which is installed between the lever and the follower and serves to insure that the focal plane of the lens can be made to coincide with the plane of the selected microfilm sheet.

3,718,392

INTERLOCKING DUAL PURPOSE SLIDE TRAY STRUCTURE FOR FORMING A SINGLE TRAY OR A PAIR OF TRAYS

Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 4, 1970, Ser. No. 43,328
Int. Cl. G03b *23/02, 23/16, 21/14*
U.S. Cl. 353—111 **8 Claims**



A slide tray structure for lap dissolve slide projectors having interleaved tray portions movable between a contracted position, in which a single tray is formed for the loading, editing and storing of slides, and for use in a standard projector, and an expanded position, in which two trays are formed for use in a lap dissolve slide projector of the type utilizing a pair of slide trays.

ERRATUM

For Class 355—78 see:
Patent No. 3,717,975

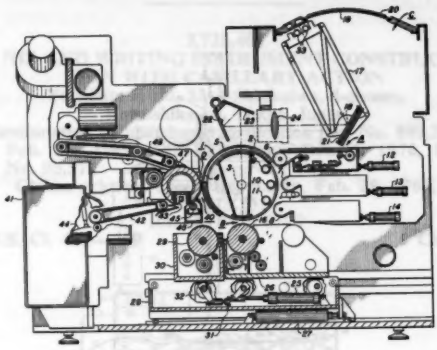
3,718,393

IMAGING APPARATUS

Egon Zurovskis, Penfield, and Raymond K. Egnaczak, Williamson, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 876,921, Nov. 14, 1969. This application Dec. 9, 1971, Ser. No. 206,476
Int. Cl. G03g *15/04*
U.S. Cl. 355—8 **5 Claims**

An image carrying cylinder portion and optical system for use in the support of an image. The cylinder portion is transparent and light image is flowingly projected along a fixed path through the diameter of the cylinder from the inside to the outside surface. The cylinder portion is rotated through the light path along which the light image is projected in sychronism, flowing with the moving cylinder portion so that



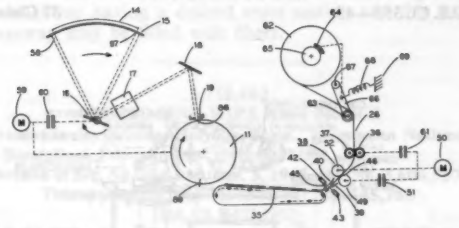
both the cylinder portion and the light image move through an image plane of the light image projection system.

3,718,394

VARIABLE SHEET LENGTH PAPER FEED AND CUTTING SYSTEM

Leon Albert Tysko, Rockaway, and Robert Cortland Burnet, Hackettstown, both of N.J., assignors to Van Dyk Research Corporation, Whippany, N.J.

Filed Feb. 8, 1972, Ser. No. 224,563
Int. Cl. G03g *15/00*
U.S. Cl. 355—13 **14 Claims**



An arrangement for use in a xerographic copier to cut copy sheets to desired variable lengths from a continuous paper roll. Both the length of scan and the operation of the paper cutter are controlled in response to the movement of the paper. Control circuitry is provided to insure maximum efficiency of utilization of available machine time.

3,718,395

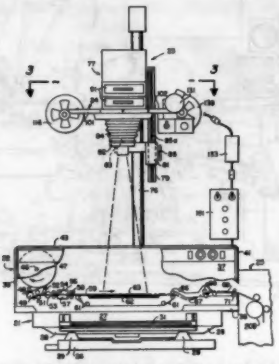
MACHINE FOR PRODUCING PLATES AND PRINTS FROM MICROFILM

Henry C. Hollwedel, Jr., Belmont, Calif., assignor to George Lithograph Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 18,421, March 11, 1970, Pat. No. 3,634,006. This application Dec. 8, 1971, Ser. No. 205,934
Int. Cl. G03b *27/32, 27/52*
U.S. Cl. 355—27 **11 Claims**

A machine for making printing plates or prints from positive or negative microfilm rolls has a table movable horizontally in two directions to adjust the position of a paper transport having an exposure positioner. Above the copier is a photographic enlarger having its film holder replaced by apparatus

which accurately advances microfilm frame by frame. The image os each frame is formed upon a cut sheet of copy paper at rest on the exposure positioner. The exposed sheet is then



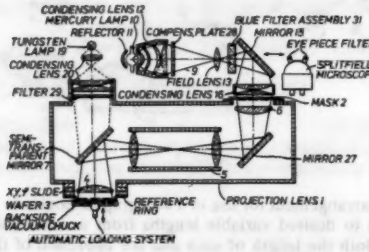
transported into a photographic film processor for developing as the next sheet is advanced to exposure position and the next frame is advanced in the microfilm advance apparatus.

3,718,396

SYSTEM FOR PHOTOGRAPHIC PRODUCTION OF SEMICONDUCTOR MICRO STRUCTURES

Klaus Hennings, Heilbronn, Germany, assignor to Licentia Patent-Verwallungs-G.m.b.H., Frankfurt am Main, Germany

Filed Dec. 28, 1971, Ser. No. 212,944
Int. Cl. G01b *11/26*
U.S. Cl. 355—43 **37 Claims**



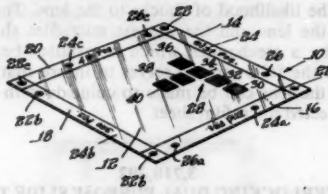
A system for producing microstructures on a substrate surface by forming an image of a mask, which contains a microstructure patter, on a photosensitive layer provided on such a substrate surface via a high resolution lens. The system has a semitransparent mirror and a microscope for observation of the alignment of a pattern to be formed on the substrate and another pattern already present on the substrate. The lens is built of a number of optical elements at least one of which is placed close to the substrate. The semitransparent mirror is placed between that element close to the substrate and the rest of the elements. A second mirror in the lens system provides for a compact symmetrical assembly. The system has illumination arrangements for projection of the mask pattern of the substrate using one wavelength, and for alignment using a different wavelength. The projection illumination arrangements are equipped with single or multiple source systems.

3,718,397

DEVICE FOR DETERMINING PROPER COLOR BALANCE IN COLOR PRINTING

Joseph J. Smajo, Chicago, Ill., assignor to Unilux Graphics, Inc., Hackensack, N.J.

Division of Ser. No. 845,288, July 28, 1969, Pat. No. 3,620,727. This application May 14, 1971, Ser. No. 143,358
Int. Cl. G03b *27/04*
U.S. Cl. 355—88 **5 Claims**



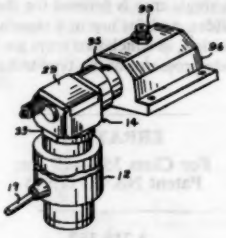
A step-wedge is reprinted four times, one for each of three colors plus black and white as a mask. The reprinting is in a different position each time, giving a total of four different positions with one selected value overprinted by each color to show the effect of the overprint, namely to demonstrate a neutral. If a neutral gray is obtained, then it is known that the printing is correct. If no neutral is obtained, a ready reference, not requiring the use of a densitometer or separation filters is immediately at hand.

3,718,398

METHOD OF ALIGNING LASER BEAM BY ROTATION

Ardath M. Becraft, Dayton, and Clifford E. Hammer, Trotwood, Ohio, assignors to the United States of America as represented by the Secretary of the Air Force

Original application Sept. 26, 1969, Ser. No. 861,386. Divided and this application Apr. 29, 1971, Ser. No. 138,422
Int. Cl. G01b *11/26*
U.S. Cl. 356—153 **1 Claim**



A boresight alignment instrument having a helium-neon gas laser mounted on an alignment mandrel which fits into the gun barrel. A 45° mirror directs the laser beam along a line concentric with the axis of the bore of the barrel. The mandrel has an expanding collet to insure positive locking of the mandrel in the barrel. The laser beam is aligned with the desired output axis, of the adapter assembly, by securing the adapter assembly and laser to an alignment fixture which permits rotation of the laser and adapter assembly. The mirror position is adjusted to stop all motion of the light spot when the as-

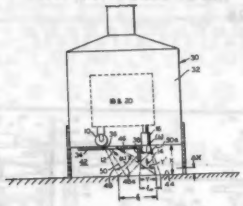
sembly is rotated 360°. The device is used with a highly reflective target to make the device useful under all lighting conditions.

3,718,399

DISTANCE COMPENSATED REFLECTANCE SENSOR

Gabor U. Kalman, 363 Brook Street, Bristol, Conn.

Filed June 29, 1971, Ser. No. 158,044
Int. Cl. G01n *21/48*; G01j *3/46*, *3/42*
U.S. Cl. 356—210 6 Claims



A distance compensated reflectance sensor is presented having a hand held sensing unit for sensing reflectance from surfaces to be measured and generating a signal thereof to be delivered to a main unit where the signal is compared with preset standards or limits for generation of a warning signal if the measured reflectance departs from desired values. The hand held sensor element has a light source, a detector element, and a baffle structure. The baffle provides a partial overlap of the illuminated field and the viewing field, to provide for automatic compensation in the event of the deviation in distance between the surface being examined and the detector element. The source, the detector, and the baffle are arranged so that all direct and directly reflected light are blocked from the detector, i.e., the detector sees only scattered light.

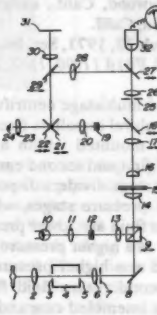
3,718,400

MIRROR DRUM OPTICAL SYSTEM FOR USE IN MICROSCOPIC SPECTROPHOTOMETER

Ken Yonekubo, Tokyo, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Feb. 7, 1972, Ser. No. 224,041
Claims priority, application Japan, Feb. 6, 1971, 46/4500
Int. Cl. G01j *3/42*; G01n *21/06*
U.S. Cl. 356—96 1 Claim

A mirror drum optical system for use in a microscopic spectrophotometer has a system of a lens and mirrors adapted to



be inserted into and retracted from the optical path. A camera is arranged to photograph the specimen and the centering of the pinholes and reflex viewing system and photoindicator permit sequential observation and measurement by an observer.

3,718,401

NIB AND WRITING INSTRUMENT CONSTRUCTION WITH CAPILLARY ACTION

Yoshihito Kiriu, 13–4 Shinkoiwa, 4-chome, Katsushika-ku, Tokyo, Japan

Continuation of abandoned application Ser. No. 802,398, Feb. 26, 1969. This application Dec. 4, 1970, Ser. No. 95,372
Claims priority, application Japan, Feb. 28, 1968, 43/13,131
Int. Cl. B43k *8/00*
U.S. Cl. 401—199 1 Claim

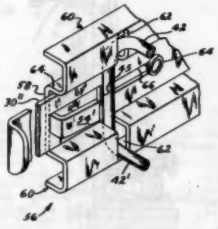
A nib and writing instrument construction having a plurality of elongated elements within a tubular casing each having peripheral, longitudinal grooves or corrugations defining jointly and with the casing longitudinal capillary passageways for writing fluid flow therethrough from a writing fluid reservoir. The elements can be made of resin and the casing also of a suitable plastic and sharpened to a writing point. The elongated elements are held frictionally in the casing in an assembled condition and can themselves be provided with a central capillary passageway having a desired cross section and this passageway may be filled with fibers.

3,718,402

ARCHED RING-WIRE POST BINDER

Frank Stanley Schade, Holyoke, Mass., assignor to National Blank Book Company Inc., Holyoke, Mass.

Division of Ser. No. 784,533, Dec. 3, 1968, Pat. No. 3,606,557.
This application May 21, 1971, Ser. No. 145,788
Int. Cl. B42f *3/02*
U.S. Cl. 402—31 2 Claims



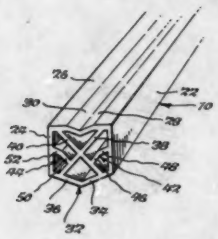
An arch-type ring binder with cover members and hinged thereto an assembly of hingedly connected back panel sections comprising opposed side panel sections and a connecting panel section, an arched split ring loose leaf toggle mechanism fixed on one side panel and means on one of said other back panel sections, preferably the other side panel section, for releasably locking the arched rings thereto, said binder with

the rings in locked condition providing a post binder type assembly with a loose leaf ring mechanism, and with the rings in unlocked condition having the operational advantages and usefulness of a ring binder type of loose leaf unit.

3,718,403
SEALING MEMBER

James J. Kerschner, Buffalo, N.Y., assignor to Acme Highway Products Corporation, Buffalo, N.Y.

Filed Feb. 16, 1971, Ser. No. 115,520
Int. Cl. E01c *11/10*
U.S. Cl. 94—18 6 Claims

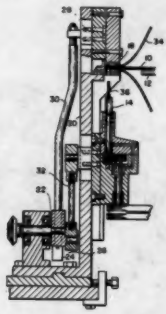


A resilient sealing member for use in an expansion joint comprising a tubular structure provided with an internal construction including support bars which are pre-formed to facilitate the controlled folding thereof.

3,718,404
APPARATUS FOR DRILLING HOLES THROUGH A STACK OF SHEET PAPER

George G. Grinnell, 166 Independence Avenue, Quincy, Mass.; Sherman K. Grinnell, 1196 Belrose Rd., Mayfield Heights, Cleveland, Ohio, and Garith K. Grinnell, 187 Indianhead Street, Hansen, Mass.

Division of Ser. No. 717,738, April 1, 1968, Pat. No. 3,525,126. This application July 27, 1970, Ser. No. 58,544
Int. Cl. B23b *39/16*
U.S. Cl. 408—46 4 Claims

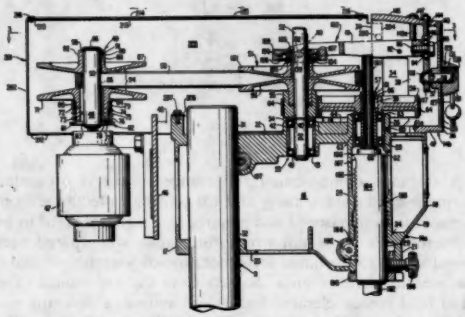


Stacks of sheets to be bound are fed into a drilling apparatus which forms a series of smooth openings into which binding elements are subsequently inserted. The stack of sheets is temporarily covered at the drilling station with a protective layer of drill lubricating material held in place by a wooden drill block which prevents development of burrs at the drill openings. The formation of the holes in the stack may be by means of a special design spiral drill or by means of a special design hollow drill.

3,718,405
DRILL PRESS OR LIKE VARIABLE SPEED DRIVE

Edward F. Keiter, Bellefontaine; Glenn F. Pfleiderer, Lafayette, both of Ohio, and David D. Pettigrew, Gibsonia, Pa., assignors to Rockwell Manufacturing Company, Pittsburgh, Pa.

Filed June 29, 1971, Ser. No. 157,949
Int. Cl. B23b *47/14, 47/16*
U.S. Cl. 408—128 11 Claims



A vari-speed pulley drive transmission for overarm machine tools, such as drill presses and similar tools having depending tool spindles, and speed selector control means and spindle return spring tension adjustment means therefore. The speed selector control means is characterized by the inclusion therein of a selector knob and adjustable friction drag means accessible to an operator standing in operating position in front of the machine tool and eccentric pin connector means journalled in a shifter ring carried by the shiftable sheave of the driven vari-speed pulley and providing a pin and slot connection with the shifter lever for calibrating the speed of the vari-speed pulley drive with the selector knob and its associated speed scale graduations.

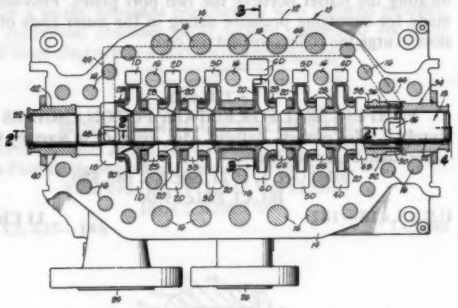
3,718,406
CENTRIFUGAL PUMP WITH INTEGRAL SEAL PRESSURE BALANCE

Hasan F. Onal, Hollywood, Calif., assignor to Borg-Warner Corporation, Vernon, Calif.

Filed March 22, 1971, Ser. No. 126,785
Int. Cl. F01d *11/00, 1/02, 25/24*
U.S. Cl. 415—111 6 Claims

An axially balanced multistage centrifugal pump having an impeller assembly of plural impellers fixed on a shaft which is rotatably and axially mounted within an elongated divided pump case formed of first and second cast metal housings and having fluid pressure stage dividers disposed between the impellers to form fluid pressure stages, whereby the pump in operation will contain fluid at a lower pressure at a first end of the housing and fluid at a higher pressure at the second end of the housing and fluid at a higher pressure at the second end thereof; first and second rotary fluid flow restriction seals mounted between the assembled case and the impeller shaft at the first and the second ends of the casing respectively to restrict fluid flow therebetween; a rotary fluid flow restriction baffle mounted pressure and around the shaft near the second rotary seal to define a seal pressure chamber. The improve-

ment comprises an integral fluid pressure balance passageway integrally defined and incorporated within the wall of one of the housings, which passageway will be in fluid communication with the fluid under pressure contained in the seal



chamber at the second end of the pump and with the lower pressure fluid contained at the first end of the pump, whereby fluid pressure exerted against the second seal and the first seal will be equalized at the same lower pressure contained at the first end of the pump.

3,718,407

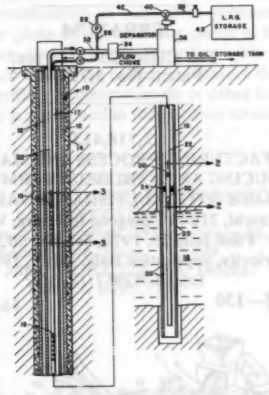
MULTI-STAGE GAS LIFT FLUID PUMP SYSTEM

Joseph S. Newbrough, 6250 Primrose Drive, La Mesa, Calif.

Filed Feb. 16, 1971, Ser. No. 115,209

Int. Cl. F04f *1/18*; B67d *5/54*

U.S. Cl. 417—108 **9 Claims**



A gas lift pump system utilizing high pressure gas from a pump delivered down a pipe string to a jet pump at the producing zone of a well to provide an initial lift for the fluid and to admix gas and fluid, and a series of supplemental lift devices at spaced intervals along the vertical extent of the well. The supplemental lift devices include a check valve which has the effect of reducing the total head of fluid which each section is called upon to lift and a gas chamber, in conjunction with a pipe mounted within the delivery tubing, to force the fluid into succeeding sections and further promote mixing. The fluid is raised stage by stage until it reaches the surface where the gas is removed and re-cycled.

3,718,408

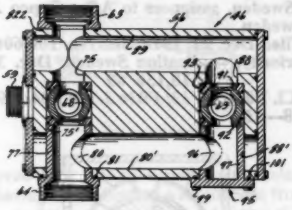
PUMP AND VALVE UNIT FOR ELECTRICAL DISCHARGE MACHINING

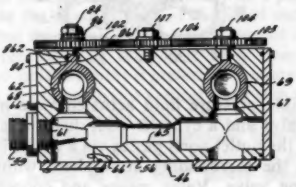
Gerald P. Dietrick, 523 Ridgeview Drive, Florence, Ky.

Division of Ser. No. 118,316, Feb. 24, 1971. This application March 20, 1972, Ser. No. 236,091

Int. Cl. F04f *5/48*

U.S. Cl. 417—178 **2 Claims**





Electrical discharge machining equipment including a worktable reservoir tank, a fluid storage and settling tank and a source of clean fluid under pressure. Clean fluid under pressure is directed to a gap between an electrode and a workpiece in the reservoir tank during machining. Fluid is pumped between the tanks by a jet pump. Clean fluid under pressure powers the jet pump. A side arm of the jet pump can be connected to each of the tanks alternately to draw fluid therefrom. The discharge of the jet pump is connected to the other tank to discharge into the other tank.

3,718,409

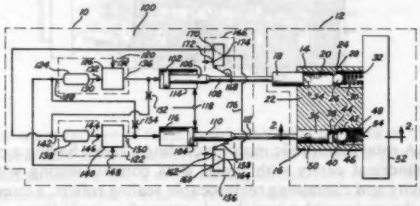
RECIPROCATING PUMP CONTROL SYSTEM

Karl Brandenberg, Hayward, Calif., and Wilbert C. Kautz, West Unity, Ohio, assignors to The ARO Corporation, Bryan, Ohio

Filed Oct. 9, 1970, Ser. No. 79,476

Int. Cl. F64b *35/02*

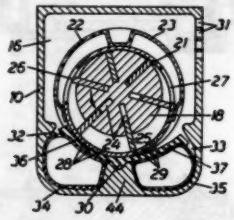
U.S. Cl. 417—326 **16 Claims**



First and second reciprocating pumps are adapted to pump fluid continuously from a fluid source to a fluid output manifold. The control system operates the pumps maintaining at least one of them always in the pumping cycle. The control system includes a flip-flop circuit utilizing pneumatic accumulators, NOT logic elements and restrictors. Pneumatically

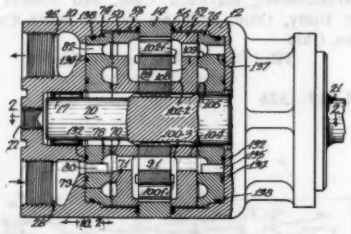
operated drive pistons and associated cylinders are provided to control the reciprocating pumps.

3,718,410
REVERSIBLE PRESSURE FLUID ACTUATED VANE MOTOR
Karl Gustav Berger, Nacka, and Gustaf Harry Fernstrom, Klinten, Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Dec. 22, 1970, Ser. No. 100,606
Claims priority, application Sweden, Dec. 31, 1969, 18,136/69
Int. Cl. F01c *21/12*; F03c *3/00*; F04c *29/08*
U.S. Cl. 418—15 **8 Claims**



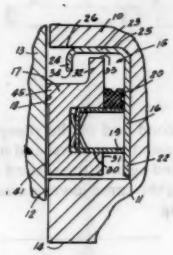
A reversible pressure fluid actuated vane motor has a reversing valve and a cylinder with dual outlet ports. Exhaust from the outlet ports passes via a cavity in the motor housing to the surrounding atmosphere without passing the reversing valve. Valve means and cooperating valve closing means are provided in the cavity for closing the one of said outlet ports offering during rotation in the respective rotational directions the first pressure fluid connection between the motor cylinder and the cavity.

3,718,411
HYDRAULIC MOTOR
Frederic W. Pollman, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.
Filed Sept. 14, 1971, Ser. No. 180,317
Int. Cl. F01c *1/00*; F03c *3/00*; F04c *1/00*
U.S. Cl. 418—82 **30 Claims**



A rotary hydraulic motor including a stator having a central cylindrical cavity with radial slots communicating with the cavity and containing reciprocable sealing rollers, a cam rotor in the cavity with a peripheral cam surface including a plurality of cam lobes with intervening lows engaging the sealing rollers to form displacement chambers, a pair of port plates secured to opposite sides of the rotor for rotation therewith including outwardly disposed portions slidably engaging the sides of the stator adjacent the roller slots, an annular array of alternate inlet and outlet ports in each port plate adjacent the roller slots in the stator, and a pair of pressure plates disposed against the surfaces of the port plates remote from the rotor and the stator. Pressure chambers around the periphery of the port plates reduce deflection of the plates, and pressure chambers behind each pressure plate seal the port plates in the housing. The rotor is constructed with passages communicating the inlet ports in the two port plates and passages communicating the outlet ports in the two port plates. Provision is made for supplying pressure acting in the outer ends of the slots to urge the rollers toward the cam.

3,718,412
PUMPING SEAL FOR ROTARY PISTON ENGINES
Harold E. McCormick, Ballwin, Mo., assignor to Ramsey Corporation, St. Louis, Mo.
Filed Oct. 1, 1971, Ser. No. 185,580
Int. Cl. F01c *19/00*
U.S. Cl. 418—142 **11 Claims**

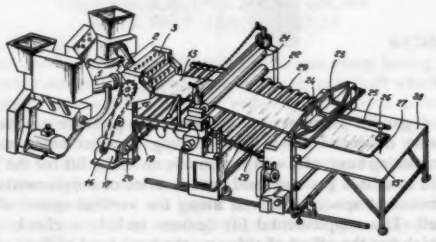


An oil seal for use between the side of a rotary piston engine rotor and the end plate of the rotor chamber, the seal being a cartridge seal including a housing with a seal member received therein and spring means biasing the seal member. The seal member has a sealing face which is grooved, the grooves formed at a non-radial angle, and the grooves acting as an inwardly pumping seal.

ERRATUM

For Class 423—415 see:
Patent No. 3,718,418

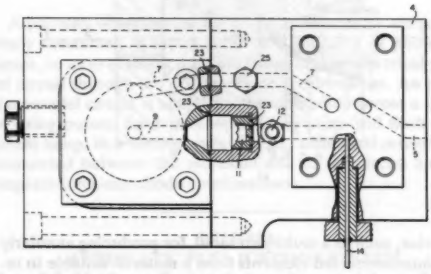
3,718,413
MANUFACTURING PROCESS AND MACHINE FOR PRODUCING AN EXTRUDED THERMOPLASTIC LAMINATE WITH MULTISHAPED VARIEGATION
Marisa Luraschi, 21040 Venegono Inferiore, Varese, Italy
Filed June 29, 1970, Ser. No. 50,504
Claims priority, application Italy, July 1, 1969, 19037 A/69
Int. Cl. B29f *1/12, 3/12*
U.S. Cl. 425—130 **6 Claims**



Manufacturing process and machine for producing a thermoplastic laminate, showing specklings with multishaped variegated pattern, characterized in that it is constituted of two or more extruders, connected to a distributing apparatus

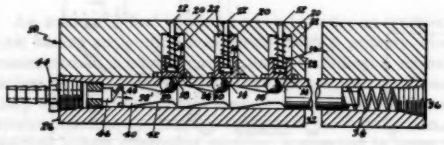
or die-plate, a pair of cylinders, a knife applied to the frame, a set rollers, constituting a sliding plate and a bench on which projects a guide, supporting a slider, sustaining a feeler or a photoelectric cell, the aforesaid distributing apparatus comprising two or more supply ducts, connected to so many extruders, at least one of said ducts being connected to a cylindrical chamber, provided in the distributing apparatus, inside which rotates a worm, provided peripherally with inclined grooves, said cylindrical chamber being further connected via a set small-sized channels to a portion of a supply duct.

3,718,414
PUMP WEAR PLATE VISCOMETER
Thurman Ralston Jones, Jr., Greenville, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 16, 1971, Ser. No. 115,657
Int. Cl. B29f 3/06
U.S. Cl. 425—146 **1 Claim**



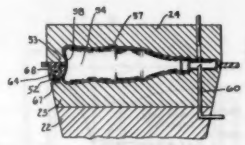
A modification of a spinning pump wear plate that enables it to be used both as a means to distribute polymer to spinning units and as an apparatus for monitoring melt viscosity of the polymer. The modification is such that polymer supplied through the wear plate by the spinning pump is first forced through a strainer, then through an orifice with a pressure transducer on each side of the orifice to measure the pressure drop across the orifice. A thermocouple or other temperature measuring device is positioned in the polymer stream near the orifice.

3,718,415
MECHANICAL AND PNEUMATIC KNOCKOUT PIN
Amedio P. De Felice, 251 Florence St., Leominster, Mass. 01453
Filed June 1, 1971, Ser. No. 148,817
Int. Cl. B29c 7/00
U.S. Cl. 425—444 **15 Claims**



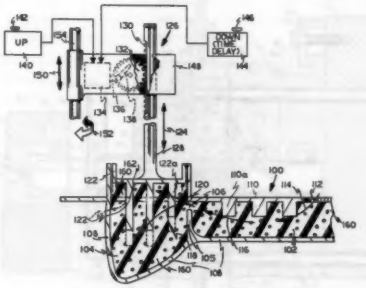
Knockout pins to eject molded articles from dies as the same opens, said pins being mechanically actuated by cams under pneumatic influence to a certain predetermined degree, and thereafter further actuated pneumatically only, to a greater extent.

3,718,416
APPARATUS FOR BLOW MOLDING CONTAINERS HAVING RAISED BOTTOM WALL PORTIONS
Richard K. Shelby, Chicago, Ill., assignor to Monsanto Company, St. Louis, Mo.
Filed Dec. 30, 1970, Ser. No. 102,783
Int. Cl. B29d 23/03; B29c 7/00
U.S. Cl. 425—326 **7 Claims**



An improved method and apparatus for releasing blown containers having raised bottom wall portions from the mold, wherein a part of the molding surface defining the raised bottom wall is mounted, preferably by means of a pivotable insert in one of the mold sections, for movement away from the mold chamber during mold opening. An undercut portion in another of the mold sections cooperates with a portion of the plastic to hold the blown parison in that mold section during opening so that the chime section on the formed container is responsible for camming the insert away from the mold chamber. The mold assembly is preferably mounted for movement along a circular path in a vertical plane with the sections moving perpendicular to the axis of the path, the pivotable mold insert thereby returning to container forming position, preferably automatically under the influence of gravity, after release of an article as the mold moves downwardly in traversing the circular path.

3,718,417
APPARATUS FOR MOLDING FOAM ARTICLES
Eugene J. Bethe, Mishawaka, Ind., assignor to Uniroyal, Inc., New York, N.Y.
Division of Ser. No. 830,407, June 4, 1969. This application April 9, 1971, Ser. No. 132,783
Int. Cl. B29d 27/04
U.S. Cl. 425—406 **2 Claims**

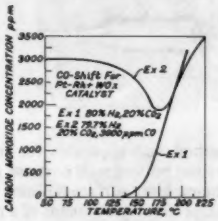


In the manufacture of foam cushions having portions of different densities, a foam material of uniform density is poured in a fluid condition into a mold having an auxiliary cavity with a retractable lid which is in its retracted position at the time that the foam is poured. After the foam has gelled or partially cured to the point where it is no longer fluid, the lid is replaced to compress the foam in one portion of the cushion, thus increasing its local density. Thereafter the foam is fully cured and removed from the mold. The resulting product is an integrally molded cushion exhibiting portions of different density.

3,718,418
CO SHIFT PROCESS

Donald Kingsley Fleming, Park Ridge; Sarabjit Singh Randhava, Evanston, and Elias Humberto Camara, Hickory Hills, all of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Sept. 1, 1970, Ser. No. 68,633
Int. Cl. C01b 31/18; H01m 27/10
U.S. Cl. 423—415 **11 Claims**

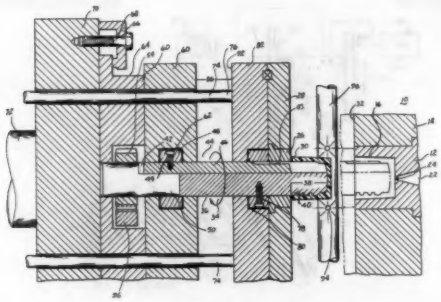


Process of conversion of CO_2 to CO in the presence of hydrogen, using catalysts of Rh and Ru metals, and alloys thereof with Pt, the Rh metals and alloys being beneficated with admixtures of reduced, amorphous tungsten or molybdenum oxides, and the Ru metals and alloys being beneficated by the molybdenum oxide only. Precise control of the product gas composition is obtained by predetermined control of process parameters of input gas flow rate and temperature conditions in the shift reactor.

3,718,419
APPARATUS FOR REMOVING A HOLLOW ARTICLE HAVING INTERNAL ENLARGEMENTS FROM AN INJECTION MOLD ASSEMBLY

Michael D. Adamo, East Lyme, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed April 21, 1971, Ser. No. 136,062
Int. Cl. B29f 1/14
U.S. Cl. 425—438 **4 Claims**

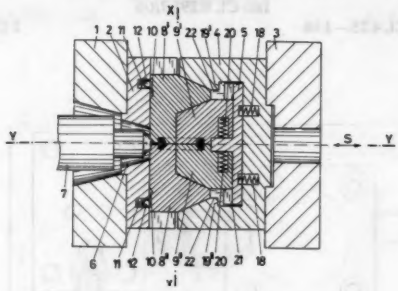


A method of removing a hollow article having peripherally spaced internal enlargements from an injection mold assembly by first drawing a portion of the mold core intermediate the enlargements rearwardly such that the end of this portion is substantially clear of the enlargements and then rotating the article and the enlargement defining portion of the core with respect to each other to substantially release the article from contact with the enlargement defining core portion. The apparatus includes a special core assembly comprising a shank member having an end portion with peripherally spaced molding depressions in its outer surface for forming the enlargements, a clearance member which is slidable along the shank member to create a clearance for the internal enlargements of either the part or the molding depressions of the shank member when either of the latter is rotated with respect to the other.

3,718,420
APPARATUS FOR PRODUCING ANNULARLY CLOSED, INTERCONNECTED ELEMENTS

Peter Florjancic, St.-Martinstrasse, D-81 Garmisch-Partenkirchen, Germany

Filed Aug. 10, 1970, Ser. No. 62,402
Int. Cl. B29c 7/00
U.S. Cl. 425—441 **5 Claims**

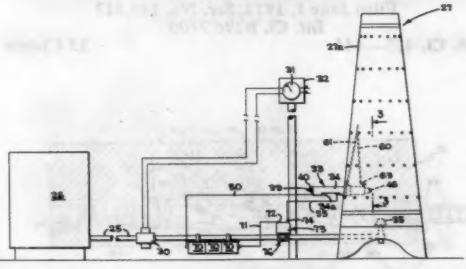


A device, such as a multi-part mold, for producing annularly closed interconnected elements from a material suitable to injection moulding. The parts of said mold being in two planes of division which are perpendicular to one another with said mold parts being provided with recesses corresponding to said annularly closed elements. The recesses of the mold parts lying in the first plane being designed to receive prefabricated interconnected elements and the recesses in the mold parts lying in the second plane receiving the new interconnected elements by injection of the moulding material.

3,718,421
ORCHARD HEATING SYSTEM

Maurice H. McMechan, Route 7, P.O. Box 59, Yakima, Wash.

Filed March 30, 1970, Ser. No. 23,635
Int. Cl. F23n 5/24
U.S. Cl. 431—23 **14 Claims**



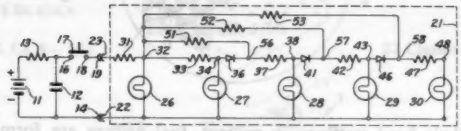
A thermostat, located in an orchard, automatically opens a liquid fuel line, causing the pressure in the line to close contacts in a switch which completes an electric circuit for energizing a resistance element in an orchard heater to ignite the heater.

3,718,422

PHOTOFLASH FIRING CIRCUITS EMPLOYING SERIES RESISTOR-DIODE COMBINATIONS

Sang-Chul Kim, Cleveland Heights, Ohio, assignor to General Electric Company, Schnectady, N.Y.

Filed Sept. 28, 1971, Ser. No. 184,463
Int. Cl. F21k 5/02
U.S. Cl. 431—95 14 Claims



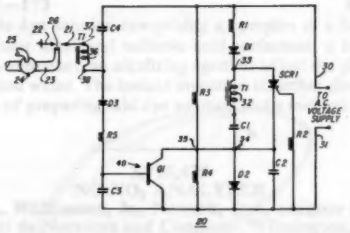
A plurality of series resistor-diode combinations are successively connected in series between a plurality of photoflash lamps, so as to connect the flash lamps into an electrical parallel circuit through the resistor-diode combinations. An end of the parallel circuit is adapted to be connected across a source of firing pulses. Each successive firing pulse will flash a different lamp. In a further embodiment, additional resistors are connected between the aforesaid end of the circuit and the respective resistor-diode combinations.

3,718,423

AUTOMATIC FUEL IGNITION SYSTEM

Russell B. Matthews, Goshen, Ind., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Sept. 7, 1971, Ser. No. 178,019
Int. Cl. F23q 3/00
U.S. Cl. 431—264 4 Claims



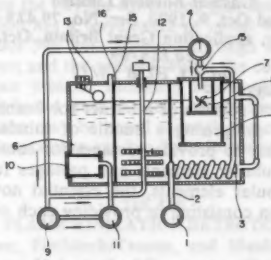
An automatic fuel ignition system includes an ignition circuit having an ignition transformer with a primary winding connected in a series circuit path, including a capacitor, across an AC source for charging the capacitor, and a secondary winding connected in series with a pair of ignition electrodes positioned adjacent a fuel outlet; a normally non-conducting silicon controlled rectifier, connected in shunt with the primary winding and the capacitor, is rendered conductive permitting the capacitor to discharge through the primary winding producing a voltage in the secondary winding whereby an ignition spark is generated across the electrodes for igniting the fuel; a control circuit enabled when the fuel is ignited inhibits further operation of the silicon control rectifier and thus inhibits further spark generation.

3,718,424

BURNER MECHANISM OF USED OIL

Kotaro Konagai, 267, Tegoshi, Shizuoka-shi, Shizuoka-ken, Japan

Filed Oct. 20, 1971, Ser. No. 190,715
Int. Cl. F23d 11/44
U.S. Cl. 431—207 10 Claims



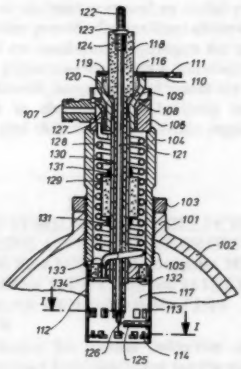
A burner mechanism of used oil wherein the used oil of heated condition is compulsorily mixed with pressured oil, mixture of the used oil with the air is then filtered so as to convert the air voids in the mixture into finer particles, filtered mixture is then again compulsorily mixed with pressured air and is finally supplied to a burner element. The mechanism may advantageously be provided with a rotary mixed for a better mixing of air with used oil.

3,718,425

GLOW PLUG CONSTRUCTION

Helmut Weyle, Bietigheim, Gunther Kauhl, Asperg, and Otto Beesch, Stuttgart, Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Mar. 3, 1972, Ser. No. 231,607
Claims priority, application Germany, Mar. 17, 1971, P 21 12 815.4
Int. Cl. F23d 11/44
U.S. Cl. 431—208 8 Claims

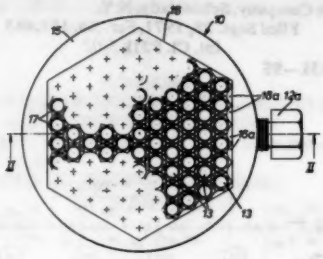


A glow plug has a tubular casing through which extends in insulated relationship a helix constituted by an electrically conductive tubular member. In the region of one end of the casing the tubular member has an inlet for combustible fuel fluid, and in the region of the other end it has one or more outlets. The tubular member is connected with a source of electrical energy which heats

it so that when fluid passes through the tubular member, it will issue at the outlet as a vapor. A pair of electrodes are provided defining in the region of the outlet a high-voltage spark gap for igniting the issuing vapor.

3,718,426
BURNER
James Michael Harris, London, England, assignor to Gasmat Burners Limited
Filed Oct. 9, 1970, Ser. No. 79,423
Claims priority, application Great Britain, Oct. 16, 1969, 50,828/69
Int. Cl. F23d *13/12*
U.S. Cl. 431—328 **10 Claims**

This invention consists of a burner for burning gaseous or liquid fuel comprising a bundle of tubular elements bunched together to provide passages for combustion air through said tubular elements and passages for fuel between said tubular elements, the essential novel feature of the invention consisting in providing each of the tubular elements with a head portion so shaped externally that when the tubular elements are bunched together with



their head portions in contact, fuel orifices are formed between said head portions.

CHEMICAL

3,718,427
METHOD AND APPARATUS FOR TREATING A MOVING WEB OF MATERIAL

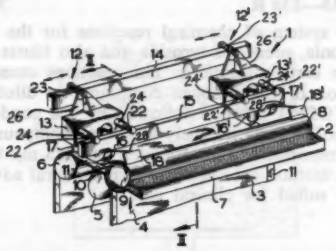
Karl-Heinz Ahrweiler, Zur Alten Schmiede 116, Germany, assignor to Eduard Kuesters Maschinenfabrik, Krefeld, Germany

Filed Sept. 20, 1971, Ser. No. 181,710

Claims priority, application, Germany, Feb. 2, 1971, P 21 04 694.6

Int. Cl. B05c *5/00*

U.S. Cl. 8—151 **22 Claims**



A method of and apparatus for selectively treating a moving web of material such as in the case of applying a liquid dye to a breadth of pile carpet. Liquid is applied to select portions of the web of material, the application thereof being responsive to a longitudinal border or edge of the web, the position of which is sensed by means provided on the apparatus.

3,718,428
ALCOHOLIC COMPOSITION OF A CATIONIC DYE-ALKYL ARYL SULFONIC ACID COMPLEX AND PROCESS OF DYEING THEREWITH

Clemens Streck, Loudonville, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed Dec. 21, 1970, Ser. No. 100,513

Int. Cl. D06p *5/04*

U.S. Cl. 8—173 **8 Claims**

A stable dye solution comprising a complex of a basic dye with a linear alkyl aryl sulfonic acid surfactant, a lower alcoholic component, an alkalizing agent to adjust the pH of the solution and water. The instant invention is further directed to a process of preparing said dye solution and a method of using same.

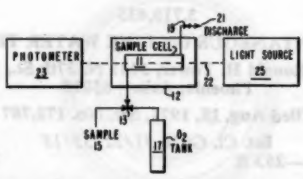
3,718,429
NO-NO_2 ANALYZER

James A. Williamson, Jr., Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 15, 1971, Ser. No. 124,039

Int. Cl. G01n *21/24*

U.S. Cl. 23—232 R **32 Claims**



Apparatus and method for NO-NO_2 analysis in which a sample gas is placed in a pressure sample cell; measuring radiation in the 410–600 nm. range passed through the cell and detected; oxygen-containing gas introduced into the cell under pressure; the above radiation again passed through the cell and detected; and the temperature controlled after introducing the oxygen-containing gas. Preferably 4 atmospheres of substantially pure oxygen constitute the oxygen-containing gas; the above measuring radiation has a wavelength of about 436 nm.; radiation of about 546 nm. is passed through cell for reference purposes; and the presure within the cell is also controlled. When present, radiation below about 410 nm. should be excluded from the cell. Alternatively, the measuring radiation may be pased through the cell only after the oxygen-containing gas has been introduced therein.

3,718,430
FLAME IONIZATION DETECTOR

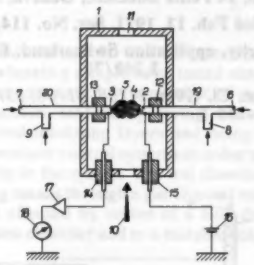
Horst Fischer, Fischbach/Taunus, and Manfred Neufelder, Frankfurt am Main, both of Germany, assignors to Battelle-Entwicklungs-Gesellschaft m.b.H., Frankfurt am Main, Germany

Filed Jan. 19, 1971, Ser. No. 107,621

Claims priority, application Germany, Jan. 24, 1970, P 20 03 207.9

Int. Cl. G01n *31/12*

U.S. Cl. 23—254 E **11 Claims**



A housing has an air inlet port and an outlet port. Opposed burner jet assemblies provide flames from electrically conductive jets mounted on insulators. Hydrogen for combustion is supplied through pipes together with a test material and a reagent. A voltage source, amplifier, and meter are connected to detect variations in electrical conductivity of the flames between the jets and thus to detect certain ingredients in the test material.

3,718,431
METHOD OF STOOL SAMPLE COLLECTION AND TESTING APPARATUS THEREFOR

John J. Wild, 1100 East 36th St., Minneapolis, Minn.

Filed Feb. 1, 1971, Ser. No. 111,253

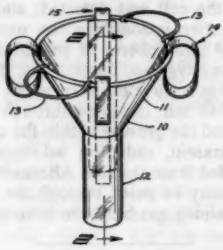
Int. Cl. A61b *5/00*; **G01n** *33/16*

U.S. Cl. 23—230 B **10 Claims**

A disposable device for private collection and testing of stool samples of human fecal discharge for the presence of abnormalities such as occult, or hidden blood, which may be a sign of malfunctioning of the intestinal tract of a patient. The device is self-contained and disposable after the test, which can be read by the patient himself. A flexible sample receiving member includes a portion adapted to gravitationally receive an intestinal stool discharge whereby a stool specimen may be deposited in the device and retained in a longitudinally elongated shape during sampling of the stool. After deposition of surface samples of the stool on the surface of the test medium,

the stool may be allowed to pass down into the toilet leaving said samples in the device for further test processing.

In one such test a reagent can be dispersed longitudinally on



the sample, the test "read" by the reaction, if any, of the reagent, the results noted, after which the entire device and stool samples are disposed of without requiring any direct handling or transportation to a laboratory, or the like.

3,718,432

DETERMINATION OF AMMONIA AND ORGANIC AMINO COMPOUNDS

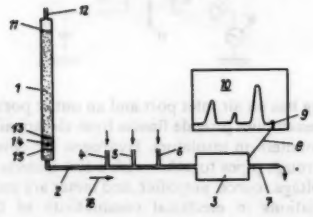
Marc Roth, 14 Petite Boissiere, Geneva, Switzerland

Filed Feb. 12, 1971, Ser. No. 114,788

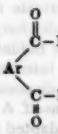
Claims priority, application Switzerland, Feb. 17, 1970, 2,269/70

Int. Cl. G01n *21/38, 31/08, 33/16*

U.S. Cl. 23—230 R **28 Claims**



A process for the determination of ammonia and organic amino compounds having at least one primary amino group, in particular amino acids and their derivatives substituted on the carboxyl group, comprising the step of creating a fluorescent product by putting into contact the compound to be determined either with a compound of the Formula I:



in which Ar indicates an aromatic radical, the $—COR_1$ and $—COR_2$ groups being attached to adjacent carbon atoms, and R_1 and R_2 are identical or different and represent hydrogen or an organic radical, and with a reducing agent, or with a reaction product of the said compound of Formula I and the reducing agent.

3,718,433

METHOD OF ANALYZING OF AMMONIA, UREA, AND TYROSINE

Robert T. Emmet, Miami, Fla.
(14 Bricin St., Annapolis, Md. 21403)

No Drawing. Continuation-in-part of abandoned application Ser. No. 799,502, Feb. 14, 1969. This application July 26, 1971, Ser. No. 166,272

Int. Cl. G01n *21/22, 33/16*

U.S. Cl. 23—230 R **3 Claims**

A new system of chemical reactions for the analysis for ammonia, urea and tyrosine and also biuret and allantoin in certain solutions. The reactions consist of a chlorination of the nitrogen compound in dilute hypochlorite (OCl^-) solution followed by the condensation with phenol to form uniquely absorbing compounds; 630 mμ for ammonia, 454 mμ for urea and 375 mμ for tyrosine. This method provides several procedural advantages especially suited for clinical use.

3,718,434

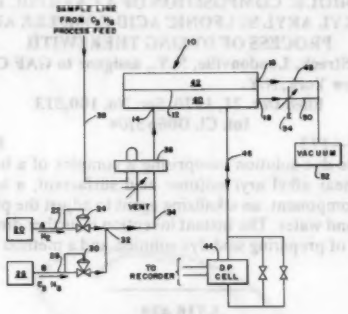
APPARATUS AND METHOD FOR DETECTING GASEOUS CONTAMINANTS

Russell W. Pierce, Broadway & Elm Streets, Hanover, Mass.

Filed Jan. 13, 1972, Ser. No. 217,583

Int. Cl. G01n *7/10*

U.S. Cl. 23—232 R **24 Claims**



Method of detecting gaseous contaminants by monitoring the rate of diffusion of a given gas through a selectively permeable metallic surface which is reversibly poisoned by the contaminants. Apparatus for practicing method.

3,718,435

INSTANTANEOUS ON-LINE WATER TESTER

Ronald H. Tower, 3141 N. 37th St., Phoenix, Ariz. 85018

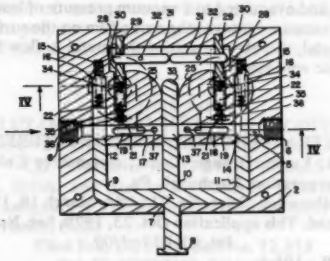
Filed Aug. 18, 1971, Ser. No. 172,787

Int. Cl. G01n *31/22, 33/18*

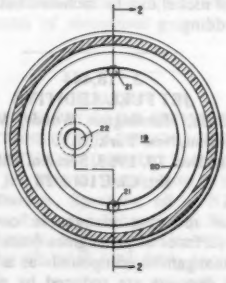
U.S. Cl. 23—253 R **11 Claims**

An instantaneous on-line water tester for use in a water flow line comprising gate means for closing the water flow line at spaced apart locations to isolate a predetermined quantity of water therebetween, means for injecting a predetermined quantity of indicator material into

the isolated quantity of water and means for viewing the isolated quantity of water with the predetermined quantity of indicator material injected thereinto. The gate means may comprise spaced apart gate elements operable to close the water flow line sequentially, first at a relatively downstream location and thereafter at a relatively upstream location. The tester includes an operating member and connections from the operating member operable sequentially upon operation of the operating member to first operate the gate means to isolate the predetermined quantity of water and thereafter inject the predetermined quantity of indicator material into the predetermined quantity of water. The gate means may close the water flow line at spaced apart locations to isolate two predetermined quantities of water, the injecting means injecting a predetermined quantity of indicator material into each isolated quantity of water. The injecting means may include pressure producing means for forcing indicator material into the isolated quantity of water, and pressure relief means may be provided for permitting escape of a quantity of water equal to the quantity of indicator material forced into the isolated quantity of water. The gate means may be in the form of a fork projecting through the water flow line, the fork operating the injecting means when the predetermined quantity of water has been isolated. The fork may have three prongs constituting gate elements to isolate two predetermined quantities of water, such gate elements being operable to close the water flow sequentially, first at the farthest downstream location, thereafter at the intermediate location and finally at the farthest upstream location, the injecting means injecting a predetermined quantity of indicator material into each isolated quantity of water.

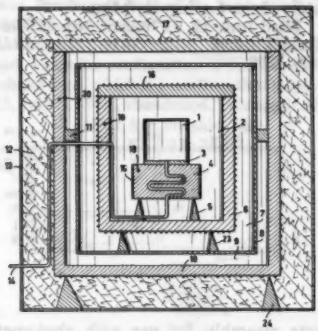


3,718,436
IMMUNO DIFFUSION CELL
Alexis E. Ushakoff, Plantation, Fla., assignor to Cordis Corporation, Miami, Fla.
Filed Nov. 11, 1971, Ser. No. 197,818
Int. Cl. C12k *1/10*; G01n *31/02, 33/16*
U.S. Cl. 23—253 R **2 Claims**



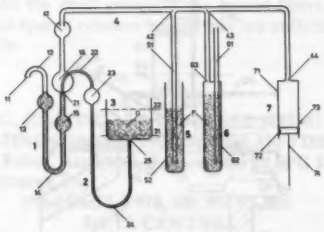
A two-directional immuno diffusion (ouchterlony) cell features a gel layer and an overlying template having wells for the reactants. One of the wells is in the form of an enclosed peripheral channel and the other is eccentric, such that diffusion of the respective reactants from the wells results in an elliptical reaction figure, the geometry and rate of formation of which are functions of the reactant concentrations and relative proportions.

3,718,437
ISOTHERMAL CALORIMETER
Paavo Paloniemi, Poutamaentie 13 D., Helsinki 36, Finland
Filed Dec. 28, 1970, Ser. No. 101,765
Int. Cl. G01n *25/20*
U.S. Cl. 23—253 R **20 Claims**



Isothermal calorimeter for the measurement of chemical reaction rate wherein a sample to be tested can be placed into a test chamber surrounded by a number of casings of a heat conductive material, said casings being insulated from each other by thermal insulating layers and being provided with separate temperature control systems in order to achieve good thermal stability in the system. The test chamber is connected to a gas feeding means through a gas channel means. The measurements are effected by means of a heat flow meter connected to the test chamber and to a metallic central mass.

3,718,438
DOSING APPARATUS
Arnost Anscherlik, 1 Schwarzenbergstrasse, 8134 Adliswil, Switzerland
Filed Sept. 8, 1970, Ser. No. 70,402
Claims priority, application Switzerland, Sept. 26, 1969, 14,679/69
Int. Cl. B01l *3/00*
U.S. Cl. 23—259 **12 Claims**



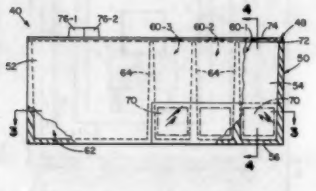
Dosing apparatus having an S-shaped dosing tube having an inlet and an outlet. An air supply means, such as a pump, is provided to supply air under pressure, vacuum or atmosphere to the inlet. A reagent storage tank having a supply tube leading into the inlet of the dosing tube is also provided. The mouth of the supply tube

is connected near the inlet above the upper level of liquid in the reagent storage tank and at a level between the outlet of the dosing tube and the upper level of liquid in the reagent storage tank and has its other end connected to the bottom of the tank. The supply tube and dosing tube are formed to maintain a liquid seal against predetermined overpressure and vacuum produced in the device by the air pump and controlled by pressure and vacuum control units even if the reagent tank is at its lowest liquid level.

3,718,439
ANALYTICAL APPARATUS

Thomas A. Bosse, Lexington, David E. Blackmer, Harvard, Jerrold Zindler, Cambridge, and Thomas F. Kelley, Canton, Mass., assignors to Instrumentation Laboratory, Inc., Lexington, Mass.

Filed June 12, 1970, Ser. No. 45,706
Int. Cl. B65d *79/02*; G01n *21/34, 33/16*
U.S. Cl. 23—259 **9 Claims**

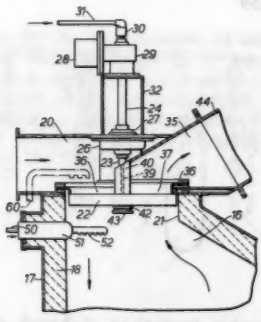


A cuvette assembly for use with photometric instrumentation includes a body portion that defines a plurality of sample chambers and includes two spaced parallel walls. Each sample chamber is defined in part by the two spaced walls and each wall has an optical window associated with each chamber so that an optical path through each chamber is defined, and the lengths of the optical paths through the chambers are equal.

3,718,440
REGENERATIVE AFTERBURNER FOR AIR POLLUTION ELIMINATION

Richard W. Foster-Pegg, 101 Fourth Street, Warren, Pa.

Continuation-in-part of Ser. No. 838,544, July 2, 1969, abandoned. This application Jan. 27, 1971, Ser. No. 110,279
Claims priority, application Great Britain, July 5, 1968, 32225/68
Int. Cl. F23g *7/06*; F23l *5/02*
U.S. Cl. 23—277 C **2 Claims**



An afterburner including a regenerator disk having passages therethrough disposed over the combustion chamber, means slowly rotating the disk, a inlet duct having a first rigid seal extending completely about the periphery of the upper surface of the disk, and an exhaust duct extending through the inlet duct, the duct chamber having a second seal extending about a sector of the upper surface of the disk within the first seal.

3,718,441
METHOD FOR FORMING METAL-FILLED CERAMICS OF NEAR THEORETICAL DENSITY

Richard L. Landingham, Livermore, Calif., assignor to The United States of America as represented by the Secretary of the Army

Filed Nov. 18, 1970, Ser. No. 90,795
Int. Cl. B44d *1/02*
U.S. Cl. 29—182.1 **7 Claims**

A method for forming metal-filled ceramics of near theoretical density comprising the positioning of a ceramic compact in a vacuum chamber together with a quantity of the filler metal. The chamber is heated above the melting point of the metal and evacuated to a vacuum pressure of less than 10^{-4} torr. The vacuum removes the oxide film on the surface of the molten metal, thereby permitting the metal to flow freely into the ceramic void spaces.

3,718,442
STRANDED STEEL WIRE STRUCTURES

Wilbert A. Lucht, Orange, Conn., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 714,084, March 18, 1968, abandoned. This application Oct. 23, 1970, Ser. No. 83,614
Int. Cl. B21c *1/00*
U.S. Cl. 29—191.6 **1 Claim**

A high strength ductile hot rolled rod and/or cold drawn wire made from commonly used steels including 0.65 to 1.00 percent carbon, 0.25 to 1.20 percent manganese, 0.35 percent maximum silicon, 0.20 percent maximum aluminum, 0.05 percent maximum sulphur, 0.012 percent maximum nitrogen, and 0.05 percent maximum phosphorus, but with the addition of 0.03 to 0.15 percent vanadium and 0.20 percent maximum molybdenum. Because of the vanadium and molybdenum additions the rod, after being hot rolled, requires only one patenting step in cold drawing to size and the rod and wire have improved physical characteristics.

3,718,443
COMPOSITE METAL PRODUCTS

Roy Gwyn Faulkner, Stourbridge, and Peter John Bridges, Sutton Coldfield, both of England, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Dec. 14, 1971, Ser. No. 208,000
Claims priority, application Great Britain, Jan. 22, 1971, 2,952/71; July 16, 1971, 33,645/71
Int. Cl. B32b *15/00*
U.S. Cl. 29—196.6 **5 Claims**

A composite product comprising a foundation alloy containing Ni to 45%, Cr 15 to 25%, C up to 0.1%, titanium and/or niobium in a total of about from 1 to 4%, Al 0 to 4%, Mo 0 to 10%, balance Fe, clad with an alloy containing Cr 45 to 60%, C up to 0.04%, Zr 0.1 to 4%, balance Ni. An intermediate layer of nickel can be included between the foundation and the cladding.

3,718,444
JET FUEL ADDITIVE

Vincent F. Hnizda, Huntington Woods, Mich., assignor to Ethyl Corporation, New York, N.Y.

Filed Dec. 20, 1968, Ser. No. 785,800
Int. Cl. C10l *1/26*
U.S. Cl. 44—66 **14 Claims**

A method of reducing manganese containing deposits formed on the surfaces of jet engines from burning fuel containing organomanganese compounds as a smoke reducer is described. The deposits are reduced by adding an organic molybdenum compound to the organomanganese containing fuel.

Cyclopentadienyl manganese tricarbonyl compounds are useful organomanganese compounds; molybdenum naphthenate is a useful molybdenum compound.

3,718,445

FLAMMABLE COMPOSITION COMPRISING A GELLED HYDROCARBON

Howard Julian Troffkin, Arlington, Va., and Vernon Paul Wystrach, Noroton Heights, Conn., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Dec. 23, 1966, Ser. No. 605,149
Int. Cl. C10l 7/02
U.S. Cl. 44—7 C 7 Claims

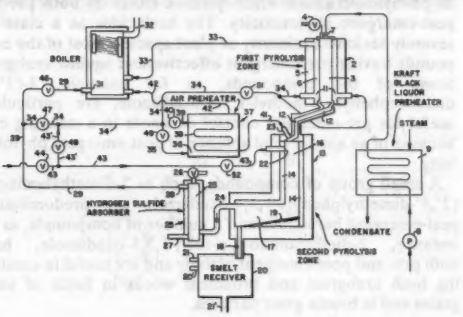
The invention relates to a cross-linkable, flammable composition of matter comprising a hydrocarbon fuel, a butadiene polymer containing 2 to 4 free carboxyl groups and 1,3,5-hexahydroaziridinylpropionyl-s-triazine.

3,718,446

POLLUTANT-FREE PROCESS FOR PRODUCING A CLEAN BURNING FUEL GAS FROM ORGANIC-CONTAINING WASTE MATERIALS

David L. Brink, and Jerome F. Thomas, both of Berkeley, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Feb. 18, 1970, Ser. No. 12,315
Int. Cl. C10j 3/10, 3/14, 3/20
U.S. Cl. 48—209 7 Claims



A process involving the high temperature distillation and pyrolysis of an organic material such as kraft black liquor, formed during conventional chemical wood pulping, to break down the material to non-combustible solids and to a stable gaseous clean burning fuel. The process involves introduction of malodorous-containing gaseous emissions from the pulping operation as a source of oxygen for attaining the temperature necessary for the pyrolysis but insufficient to effect stoichiometric (complete) combustion of the organic material. These kraft mill malodorous emission gases are occasionally burned with inherent incomplete combustion, leaving significant amounts of obnoxious gases to pollute the atmosphere.

3,718,447

GRINDING WHEELS FORMED FROM PRE-POLYMER COMPOSITIONS CONTAINING ALIPHATICALLY UNSATURATED IMIDO RADICALS

Louis E. Hibbs, Jr.; Fred F. Holub, both of Schenectady, and Kenneth A. Darrow, Sprakers, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 30, 1970, Ser. No. 77,000
Int. Cl. B24b 1/00; C08g 51/12
U.S. Cl. 51—295 7 Claims

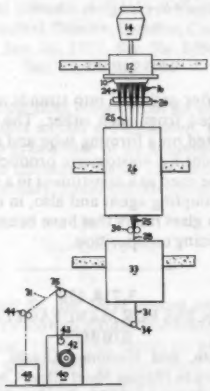
A molding composition for the manufacture of resinoid bonded abrasive structures is described. Each molding composition employs a high temperature thermosetting prepolymer (or mixture of organic materials) containing aliphatically unsaturated imido radicals, which cures with essentially no evolution of volatiles to produce polyimide resin cross-linked with carbon-to-carbon and/or carbon-to-nitrogen bonds. The preferred molding composition embodies (in addition to the aforementioned type of pre-polymer) quantities of abrasive particles; particles of a strong, high thermal conductivity filler and solid lubricant particles. Grinding wheel composite structures produced from these molding compositions are particularly effective for dry grinding.

3,718,448

GLASS FIBER FORMING AND COATING PROCESS

Warren W. Drummond, Allison Park, and Donald W. Denniston, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 80,219, Oct. 12, 1970, abandoned, which is a continuation of Ser. No. 814,731, April 9, 1969, abandoned, which is a continuation-in-part of Ser. No. 742,743, July 5, 1968, abandoned. This application Jan. 3, 1972, Ser. No. 214,748
Int. Cl. C03c 25/02
U.S. Cl. 65—3 10 Claims



Simultaneously forming a large number of continuous filament glass fibers from a single bushing, coating the individual glass fibers with an aqueous liquid coating material, combining the fibers into a plurality of strands and drying the coating on the fibers while the strands are spaced from each other. In the strand forming process, the individual coated glass fibers are brought together and held together in small, spaced groups of fibers and the small groups of the coated fibers are dried while in this spaced relation before they are collected on the forming tube.

3,718,449

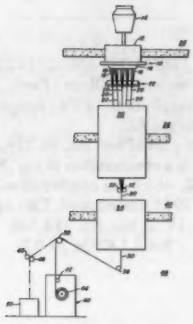
SIZING, COATING AND COMBINED SIZING AND COATING COMPOSITION FOR GLASS FIBERS

Dennis M. Fahey, Aspinwall, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 1, 1970, Ser. No. 93,980
Int. Cl. C03c 25/02
U.S. Cl. 65—3 7 Claims

Individual glass fibers are coated with a combined sizing and coating composition that includes furfuryl alcohol as a constituent. The preferred combined sizing and coating composition comprises an aqueous mixture including furfuryl alcohol, ammonia, an elastomeric latex selected from natural and synthetic rubber latices such as neoprene, isoprene, butyl rubber, butadiene-styrene copolymers, acrylonitrile-bu-

tadiene-styrene terpolymers, styrene-butadiene-vinylpyridine terpolymers, and the like, an aminosilane coupling agent such as gamma-aminopropyltriethoxysilane, and a resorcinol-formaldehyde resin. An aqueous solution of the combined sizing and coating composition is prepared and the individual glass fibers are coated shortly after attenuation with this combined sizing and coating composition. The coated individual glass



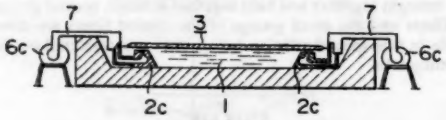
fibers are thereafter gathered into strands and the strands are dried while spaced from each other. The dried strands are thereafter collected on a forming tube and are used as a glass fiber reinforcement for elastomeric products. The furfuryl alcohol may also be used as a constituent in a sizing composition that includes a coupling agent and also, in a coating composition, for use with glass fibers that have been previously coated with a separate sizing composition.

3,718,450

FLOAT PROCESS FOR MANUFACTURE OF GLASS RIBBON

Nobuyoshi Ohsato, and Naotomo Akashi, both of Maizuru, Japan, assignors to Nippon Sheet Glass Co., Osaka, Japan

Filed Oct. 14, 1970, Ser. No. 80,686
Claims priority, application Japan, Oct. 15, 1969, 44/82728
Int. Cl. C03b *18/00*
U.S. Cl. 65—99 A **8 Claims**



An improvement in the float process for the manufacture of glass ribbon having a thickness different from the equilibrium thickness, said improvement being characterized in that jets of molten metal are impinged against both side edge portions of the glass ribbon from nozzles disposed below the glass ribbon and in the molten metal bath, and a lateral stretching force, in the case of outward impinging, or a lateral contracting force, in the case of inward impinging, is imparted to the glass ribbon by the momentum of the molten metal impinged from the nozzles against the glass ribbon.

3,718,451

METHOD OF MAKING FERTILIZER FROM CHICKEN MANURE

Heinz Baumann, 3 Zucherfabrikstr., Frankethal upper Palatinate, Germany

Continuation of Ser. No. 831,105, June 6, 1969, abandoned.
Filed July 7, 1971, Ser. No. 160,506
Int. Cl. C05f *11/08*
U.S. Cl. 71—9 **7 Claims**

A fertilizer and soil conditioner material is prepared from chicken manure, normally containing 80–90 percent water, by mixing the manure with a small amount of comminuted urea-formaldehyde resin foam sufficient to absorb the water, fermenting the manure while mixed with the foamed resin, and reducing the water content to not much more than 40 percent. The product is a practically odorless humus-like substance rich in microbial cells.

3,718,452

COMBATING UNWANTED VEGETATION WITH 2-ARYL-5-SUBSTITUTED 1,3,4-OXADIAZOLES

Norman A. Dahle, Mission, and William C. Doyle, Jr., Leawood, both of Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 24, 1969, Ser. No. 869,369
Int. Cl. A01n *9/22*
U.S. Cl. 71—92 **23 Claims**

Unwanted vegetation is combated by application of a class of phenyloxadiazoles which possess either or both pre and post-emergent phytotoxicity. The herbicides as a class are severely toxic to a minority of plant species, most of the compounds having pre-emergent effectiveness against crabgrass. Some of the compounds, as for example, 2-(3′,4′-dichlorophenyl)-5-methyl-1,3,4-oxadiazole, are particularly useful for pre-emergent control of weeds in a standing crop because of an almost total absence of post-emergent phytotoxicity.

A small group of compounds, such as 2-dimethylamino-5-(2′,4′-dimethylphenyl)-1,3,4-oxadiazole are predominantly post-emergent herbicides and a number of compounds, as for instance, 2-diethylamino-5-p-tolyl-1,3,4-oxadiazole, have both pre- and post-emergent activity and are useful in combating both crabgrass and broadleaf weeds in fields of small grains and in brome grass pastures.

3,718,453

PRODUCTION OF POTASSIUM DIHYDROGEN PHOSPHATE FERTILIZERS

William H. Thompson, Dublin 14, Ireland, assignor to W. & H. M. Goulding Limited, Dublin, Ireland

Filed Sept. 19, 1969, Ser. No. 859,435
Claims priority, application Great Britain, Sept. 20, 1968, 44,789/68; June 6, 1969, 28,659/69
Int. Cl. C05b *7/00*; C01b *25/28*
U.S. Cl. 71—34 **11 Claims**

The invention relates to the production of fertilizers, in particular potassium dihydrogen phosphate. This is obtained through acid attack on phosphate rock by a medium obtained by the reaction of sulphuric acid with potassium chloride. In particular, the phosphate rock is reacted with a medium comprising potassium bisulphate, sulphuric acid and phosphoric acid. As a result, the solid calcium sulphate formed in the reaction mixture can be readily filtered off from the mother liquor and the potassium dihydrogen phosphate product can be recovered in a commercially operative process. The mother liquor containing phosphoric acid and potassium dihydrogen phosphate is recycled to the original reaction mixture.

3,718,454

STABILIZED PESTICIDAL WETTABLE POWDER FORMULATIONS

Konrad Albrecht, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Dec. 2, 1969, Ser. No. 881,587

Claims priority, application Germany, Dec. 5, 1968, P 18 12 947.0

Int. Cl. A01n 9/24

U.S. Cl. 71—106 8 Claims

The invention provides stabilized pesticidal formulations containing at least one 4,6-dinitro-2-sec.butylphenyl ester as active ingredient and as a stabilizing agent a sodium dinaphthylmethane disulfonate having unsatified free sulfonic acid groups.

3,718,455

METHOD OF COMBATTING WEEDS WITH α-NAPHTHOXY ACETAMIDES

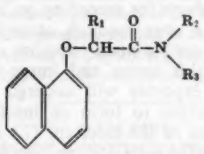
Don R. Baker, Orinda; Harry Tilles, El Cerrito, both of Calif., and Chester L. Dewald, Celaya, Gto., Mexico, assignors to Stauffer Chemical Company, New York, N.Y.

Continuation-in-part of Ser. No. 794,836, Dec. 19, 1968, abandoned, which is a division of Ser. No. 637,624, May 11, 1967, abandoned, which is a continuation-in-part of Ser. No. 352,310, March 16, 1964, abandoned. This application July 20, 1970, Ser. No. 56,656

Int. Cl. A01n 9/20

U.S. Cl. 71—118 17 Claims

Substituted α-naphthoxy acetamides having the general formula



wherein R_1selected from the group consisting of hydrogen and lower alkyl, R_2 is selected from the group consisting of hydrogen, lower alkyl, and lower alkenyl, and R_3 is selected from the group consisting of lower alkyl, and lower alkenyl; provided that when R_1 and R_2 are both hydrogen then R_3 is lower alkyl having from one to two carbon atoms, inclusive. The compounds are effective as herbicides in the control of grasses and broadleaf plants with both pre-emergence and post-emergence activity. Representative compounds are N,N-dimethyl α-naphthoxyacetamide, N,N-diethyl 2(α-naphthoxy)-propionamide, N-isopropyl 2(α-naphthoxy)-butyramide, and N-methyl α-naphthoxy-acetamide.

3,718,456

HERBICIDAL METHOD EMPLOYING 4-CHLORO-1-NAPTHYL 2'-PROPYNYL ETHER

Alexander Mihailovski, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed July 12, 1971, Ser. No. 161,990

Int. Cl. A01n 9/24

U.S. Cl. 71—124 1 Claim

The use of a 4-chloro-1-napthyl 2'-propynyl ether as a herbicide is disclosed.

3,718,457

PROCESS FOR THE RECOVERY OF MERCURY FROM WASTE BRINE FROM MERCURY CELLS

John Hubert Entwisle, and Robert William Griffiths, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England, by said Entwisle

Filed Jan. 29, 1971, Ser. No. 111,091

Claims priority, application Great Britain, Feb. 20, 1970, 8,226/70

Int. Cl. C22b 43/00

U.S. Cl. 75—108 11 Claims

A process for recovering mercury from waste brine from mercury cells comprising adding sulphide or hydrosulphide ions to the brine to precipitate mercury sulphide, trapping the mercury sulphide on a mixed media filter in which the average size of particles in successive super-imposed layers decreases and the specific gravity of the particles increases from the top of the filter downwards, removing the mercury sulphide from the filter by backwashing with an aqueous liquor, separating the mercury sulphide from the backwash liquor and treating the sulphide to produce metallic mercury.

3,718,458

LIQUID-LIQUID SEPARATION OF COBALT FROM AMMONIACAL SOLUTIONS

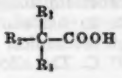
Gordon Malcolm Ritcey, and Bernard Henry Lucas, both of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Jan. 26, 1971, Ser. No. 109,899

Int. Cl. C22b 23/04

U.S. Cl. 75—119 12 Claims

A process for separating cobalt from an aqueous ammoniacal solution in which metals are dissolved, the solution containing at least 50 grams/liter of an ammoniacal salt and the cobalt being in the cobaltous form. The solution at pH 7–9 is contacted with a tertiary, mono-carboxylic acid of the formula



wherein R_1, R_2 and R_3 are alkyl groups and the molecular chain contains 6–19 carbon atoms, preferably dissolved in an inert organic diluent. The cobalt values are extracted from the aqueous phase to the organic extract phase and the resultant cobalt loaded organic phase is separated from the remaining aqueous raffinate phase containing, for example, the nickel in solution.

3,718,459

COMPOSITE COMPOSITIONS

Hans-Jurgen A. Stenzel, Brentwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed June 29, 1970, Ser. No. 64,836

Int. Cl. C21c 7/02; C22b 5/00

U.S. Cl. 75—132 6 Claims

Ferrophosphorus containing at least 1 percent silicon by weight is admixed with calcium carbonate and formed into an integral composite, the silicon content of which is converted to silica upon addition of the composite to molten iron, steel, or alloys thereof. The composite provides, for example, a useful effective low silicon source of phosphorus and alloying constituents for iron, steel and their alloys.

3,718,460

MG-AL-SI ALLOY

George S. Foerster, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 687,457, Dec. 4, 1967, abandoned. This application June 5, 1970, Ser. No. 43,946

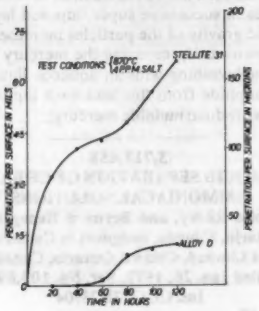
Int. Cl. C22c 23/00; B22d 21/00

U.S. Cl. 75—168 M 2 Claims

A magnesium alloy containing 3.5 to 7% Al, 0.4 to 1.5% Si, up to 1% Mn and up to 2% Zn. Such alloy possesses the com-

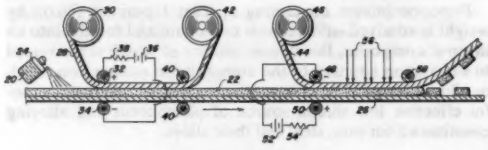
bination of high strength and improved creep resistance over the prior art alloys. This alloy is particularly adaptable to die casting.

3,718,461
COBALT-BASE ALLOYS
Michael Albert Pike Dewey, High Wycombe, England, assignor to Fulmer Research Institute Limited
Filed Aug. 19, 1971, Ser. No. 173,159
Claims priority, application Great Britain, Aug. 24, 1970, 40,699/70
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 **16 Claims**



Alloys consisting of at least 45% cobalt and particular amounts of carbon, chromium, tungsten and aluminium, have a high resistance to oxidation and hot-corrosion attack and, also, a high mechanical strength at temperatures up to about 900° C. The alloys may also contain iron and/or nickel.

3,718,462
MANIFOLD ELECTRIFICATION PROCESS
Ivar T. Krohn, and Geoffrey A. Page, both of Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed June 3, 1969, Ser. No. 829,963
Int. Cl. G03g *13/22*
U.S. Cl. 96—1.3 **12 Claims**



A process for improving the imaging characteristics of electrically photosensitive material employed in the manifold layer transfer imaging process which comprises subjecting the material to an electric field of known polarity and then reversing the polarity of the field prior to the exposure of the imaging material to electromagnetic radiation to which it is sensitive.

3,718,463
PHOTOCONDUCTIVE COATING COMPOSITIONS USING A POLY(VINYL-HALOBENZAL) BINDER
Raymond H. Young, Jr., Macon, Ga., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed June 22, 1971, Ser. No. 155,655
The portion of the term of the patent subsequent to Aug. 22, 1989, has been disclaimed
Int. Cl. G03g *5/08, 5/04*
U.S. Cl. 96—1.8 **11 Claims**

Disclosed herein are coating compositions comprising an organic solvent solution of a photoconductor, a dye sensitizer and a poly(vinyl-halobenzal) binder.

3,718,464
DEVELOPMENT ACCELERATORS FOR IMAGE TRANSFER SYSTEMS
Donald E. Janssen; Delbert D. Reynolds, and Bernard C. Cossar, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 24, 1971, Ser. No. 174,507
Int. Cl. G03c *1/48, 5/54, 7/00*
U.S. Cl. 96—29 D **27 Claims**

A development accelerator comprising a 2-substituted aminomethyl-5-alkylhydroquinone or salt thereof increases the maximum density in a direct-positive color diffusion transfer system utilizing immobile couplers which form diffusible dyes.

3,718,465
DIFFUSION TRANSFER ELEMENT AND METHOD
Carl F. W. Ekman, Bedford, Mass., assignor to Itek Corporation, Lexington, Mass.
Continuation-in-part of application Ser. No. 492,254, Oct. 1, 1965. This application May 18, 1970, Ser. No. 38,029
Int. Cl. G03c *1/68*
U.S. Cl. 96—29 **26 Claims**

Process and products for recording an image comprising (1) exposing a copy medium comprising a photosensitive material capable upon exposure of producing a physically developable image and image-forming materials which upon exposure will undergo an oxidation-reduction type reaction to form an insoluble image in the exposed portions of the medium, (2) contacting this medium with an image-receiving medium in the presence of solvent for the image-forming materials, whereby the image-forming materials in the unexposed portions of the image storage medium are transferred to the image-receiving medium, and the transferred image-forming materials establish a positive image pattern in the image-receiving medium. The invention also relates to systems for practicing these processes.

3,718,466
MAGNETIC DEVELOPMENT
Jay George Schreckendgust, Franklin, Ohio, assignor to A. E. Staley Manufacturing Company, Decatur, Ill.
No Drawing. Filed July 12, 1971, Ser. No. 161,958
Int. Cl. G03c 5/24
U.S. Cl. 96—48 R **6 Claims**

Forming ferromagnetic patterns which comprise exposing a non-magnetic base bearing a solid, light-sensitive organic layer having a thickness of at least 0.2 micron, capable of developing a R_f of 0.2 to 2.2 by powder embedment imaging with physical force, to actinic radiation in predetermined areas corresponding to an optical pattern; continuing the exposure to establish a potential R_f of 0.2 to 2.2 by powder embedment imaging with physical force; applying to said layer of organic material, free flowing ferromagnetic powder particles having a diameter along at least one axis of at least about 0.3 micron, but less than 25 times the thickness of said first organic layer; while the layer is at a temperature below the melt-

ing point of said organic layer, embedding said ferromagnetic particles in a stratum at the surface of said organic layer without physical force by applying a magnetic field substantially perpendicular to said light-sensitive layer; and removing non-embedded particles from said organic layer to develop a discrete permanent pattern of ferromagnetic material.

3,718,467

POSITIVE WORKING PHOTOGRAPHIC PROCESS FOR PRODUCING COLORED IMAGES OF METAL CHELATES OF SULFUR COMPOUNDS

Eiichi Inoue and Toshihiro Yamase, Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 774,178, Nov. 7, 1968. This application Mar. 25, 1971, Ser. No. 128,201

Int. Cl. G03c *5/24*

U.S. Cl. 96—48 R 7 Claims

Colored images are obtained by imagewise exposing a composition containing a sulfur compound such as a dithiocarbamate, thioxanthate or N,N-diacetic acid derivative of a dithiocarbamate in order to photolyze said sulfur compound and then treating the photolyzed composition with a metal salt.

3,718,468

STABILISING DEVELOPED PHOTOGRAPHIC IMAGES

Werner Berthold, Kiel; Anita Von Konig, and Helmut Timmler, both of Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed April 1, 1970, Ser. No. 24,868

Claims priority, application Germany, April 15, 1969, P 19 19 045.5

Int. Cl. G03c *5/26, 1/06, 1/34*

U.S. Cl. 96—50 3 Claims

Exposed and developed photographic silver images can be stabilized by treating the layer containing the exposed image with a compound which reacts with the silver halide in the unexposed and undeveloped areas of the layer to form a light-insensitive reaction product. Fading of the silver images thus produced is prevented by performing the development in the presence of mercapto substituted heterocyclic compounds.

3,718,469

MAKING OF A PHOTOGRAPHIC IMAGE

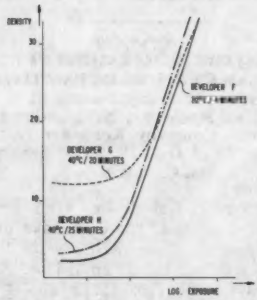
Tadao Hatano; Hikoharu Hara; Masatoshi Sugiyama, and Reiichi Ohi, all of Ashigara-Kamigun, Kanagawa, Japan, assignors to Fuji Photo Film Co., Kanagawa, Japan

Filed Oct. 19, 1970, Ser. No. 82,032

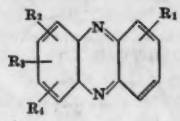
Claims priority, application Japan, Oct. 17, 1969, 44/83032

Int. Cl. G03c *5/26, 5/30, 1/34*

U.S. Cl. 96—50 R 23 Claims



A method for forming a photographic image which comprises treating a gelatinous silver halide photographic material in the presence of an aldehyde-type hardening agent and a compound represented by the following general formula:



wherein R_1 and R_2 are each hydrogen, chlorine, bromine, hydroxyl group, carboxyl group, carboxyl group substituted with sodium, potassium or ammonium, sulfoxyl group, or sulfoxyl group substituted with sodium, potassium or ammonium, wherein at least one of said R_1 and R_2 being a carboxyl group, substituted carboxylate, sulfoxyl group or substituted sulfoxylate, and R_3 and R_4 each being hydrogen, an alkyl group, or a hydrocarbon ring, and product so obtained is disclosed.

3,718,470

SURFACE DEVELOPMENT PROCESS UTILIZING AN INTERNAL IMAGE SILVER HALIDE EMULSION CONTAINING A COMPOSITE NUCLEATING AGENT-SPECTRAL SENSITIZING POLYMETHINE DYE

John Spence, Honeoye Falls, and Donald E. Janssen, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 85,705, Oct. 30, 1970, abandoned. This application Feb. 12, 1971, Ser. No. 115,128

Int. Cl. G03c *5/24*

U.S. Cl. 96—64 11 Claims

Polymethine dyes, including cyanine, carbocyanine, dicarbocyanine, merocyanine and styryl dyes, are useful in direct positive photographic image-forming processes when included in a light-sensitive silver halide internal image emulsion. These dyes are N-substituted with alkyl groups whose terminal carbon atom is additionally substituted with 1-hydrazonoalkyl groups. They function both as spectral sensitizers and as nucleating agents.

3,718,471

FILM RECORD CARD

Evan A. Edwards, Pittsford, and Frederick F. Tone, Holley, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 3, 1970, Ser. No. 60,491

Int. Cl. G03c *1/52, 1/64, 1/66*

U.S. Cl. 96—75 14 Claims

A film record card having an aperture therein and a photographic film secured over the aperture wherein the card has an area in one face thereof recessed about the aperture to a depth at least as great as the thickness of the film, the film having dimensions greater than the aperture and less than the recessed area. A second recessed area is formed in the same face of the card and extends about the periphery of the first recessed area, the second recessed area having a depth substantially less than the thickness of the film. A thin layer of a fluid-impermeable material, such as a thermoplastic film, is coated on the recessed areas and acts to protect the card from the adverse effects of photographic processing solutions as well as acting to secure the photographic film over the aperture.

3,718,472

FILTER DYES FOR PHOTOGRAPHIC ELEMENTS

Gene L. Oliver, and Judith M. Harbison, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed March 4, 1971, Ser. No. 120,933

Int. Cl. G03c *1/84*

U.S. Cl. 96—84 R 16 Claims

Oxonol, benzylidene and cinnamylidene dyes derived from cyanomethylsulfone compounds are useful as filter dyes, espe-

cially for photographic elements. They absorb primarily in the blue region of the spectrum. Bis(methylsulfonylacetonitrile)trimethine oxonol, sodium salt; 2-p-dimethylaminobenzylidene-2-methylsulfonylacetonitrile and 2-p-dimethylaminocinnamylidene-2-methylsulfonylacetonitrile are illustrative of the filter dyes of the invention.

3,718,473

PHOTOPOLYMERIZABLE ELEMENTS CONTAINING HYDRO PHILIC COLLOIDS AND POLYMERIZABLE MONOMERS FOR MAKING GRAVURE PRINTING PLATE RESISTS

Joseph Edmund Gervay, Red Bank, and Peter Walker, Colts Neck, both of N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 864,206, Oct. 6, 1969, abandoned, which is a continuation-in-part of Ser. Nos. 766,329, Oct. 9, 1968, abandoned, and Ser. No. 849,297, Aug. 7, 1969, abandoned. This application Jan. 27, 1971, Ser. No. 110,319

Int. Cl. G03c *1/90, 1/68, 1/70*

U.S. Cl. 96—83 **12 Claims**

A photopolymerizable element comprising a support strippable from a photopolymerizable layer comprising a hydrophilic, macromolecular organic polymer dispersion medium including a dispersed phase containing (1) at least one ethylenically unsaturated monomer having a boiling point above 100° C. at normal atmospheric pressure and being capable of forming a high polymer by free-radical initiated, chain-propagating addition polymerization; and (2) in reactive association with said monomer, at least one free-radical photoinitiator activatable by actinic radiation in an amount mount constituting from 0.01 to 20.0 percent by weight of the total solids in said dispersion. The elements are useful for making continuous tone gravure printing plates and printed circuit etching resists. On exposure to actinic radiation, the dispersed monomer droplets polymerize or harden to various degrees and the layer becomes resistant to diffusion of aqueous etching solutions in proportion to the exposing radiation. Exposure, first to a conventional gravure screen pattern then to a continuous tone positive or negative, leaves an image in the resist which may be pressed against and transferred to a moistened metal plate and the support stripped off. The resist-bearing metal plate is then etched with an etching solution, e.g., aqueous ferric chloride, to produce a continuous tone gravure image suitable for printing.

3,718,474

LAYERS CROSSLINKABLE BY LIGHT

Gunter Kolb; Adolf Schmidt; Robert Schmitz-Josten, and Erich Wolff, all of Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed April 5, 1971, Ser. No. 131,526

Claims priority, application Germany, April 23, 1970, P 20 19 598.6

Int. Cl. G03c *1/68*

U.S. Cl. 96—115 P **5 Claims**

Soluble polymeric cyclopentadienes form particularly desirable light-sensitive layers, being crosslinked to insoluble condition by light with or without the help of a crosslinking agent.

3,718,475

SILVER HALIDE SUPERSENSITIZED PHOTOGRAPHIC EMULSION

Keisuke Shiba, and Akira Sato, both of Ashigara-Kamigun, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed June 25, 1970, Ser. No. 49,981

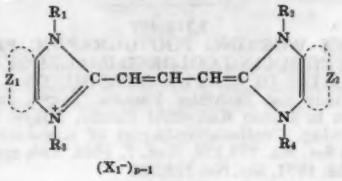
Claims priority, application Japan, June 25, 1969, 44/50117

Int. Cl. G03c *1/14*

U.S. Cl. 96—124 **22 Claims**

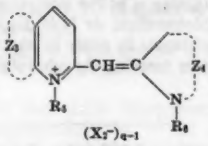
A silver halide photographic emulsion is super-sensitized in the green wave length region by adding thereto at least one sensitizing dye of the following formula I and at least one sensitizing dye of the following formula II; and, optionally a compound of the following formula III:

FORMULA I



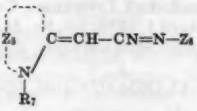
$(X_1^-)_{p-1}$

FORMULA II



$(X_2^-)_{q-1}$

FORMULA III



The substituents are described in detail hereinbelow.

3,718,476

SILVER HALIDE ELEMENT CONTAINING MEROCYANINE DYES WITH A 3-PYRROLINYLALKYL GROUP

Arthur Fumia, Jr., and Donald W. Heseltine, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 23, 1970, Ser. No. 83,621

Int. Cl. G03c *1/10*

U.S. Cl. 96—127 **7 Claims**

Novel merocyanine dyes of which the acid nucleus, such as a rhodanine nucleus, has a 3-pyrrolinylalkyl group attached thereto. The dyes are spectral sensitizers for silver halide photographic emulsions and also increase the blue sensitivity of the silver halide. Intermediates for these dyes are novel cyanoalkyl-3-pyrrolines and aminoalkyl-3-pyrrolines.

3,718,477

SILVER HALIDE EMULSIONS CONTAINING HOLOPOLAR CYANINE DYES WITH URAZOLE NUCLEUS

Philip W. Jenkins, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 19, 1970, Ser. No. 82,076

Int. Cl. G03c *1/22*

U.S. Cl. 96—140 **7 Claims**

Novel polymethine dyes derived from certain urazole compounds are described. The dyes have utility as filter dyes and many of them are useful as spectral sensitizers for photographic silver halide emulsions. Anhydro-1-[2-(2-benzothiazolyl ethohydroxide)vinyl] - 4 - phenylurazole, anhydro - 1 - [4-(2-benzothiazolyl ethohydroxide)-1,3-butadienyl]-4-phenylurazole and anhydro - 1 - [2-(2-benzothiazolyl ethohydroxide)vinyl] - 4 - phenyldithiourazole, for example, are illustrative of the polymethine dye compounds.

3,718,478
A PROTEIN-ACETYLENIC ESTER COMPLEX TO RETARD DIGESTION IN THE RUMEN
Bernard S. Wildi, Kirkwood, and Robert E. Miller, Ballwin, all of Mo., assignors to Monsanto Company, St. Louis, Mo.
Filed Oct. 27, 1970, Ser. No. 84,478
Int. Cl. A23k *1/18*
U.S. Cl. 99—2 R 5 Claims

Improved protein feed material for ruminants which is resistant to digestive breakdown in the rumen but not in the abomasum and/or intestines which comprises the reaction product of a protein-containing feed material and an ester selected from the group consisting of acetylenic monoesters and acetylenic diesters. Exemplary of such acetylenic esters are ethylene glycol, bispropiolate and n-decyl propiolate.

3,718,479
METHOD FOR MANUFACTURE OF PROCESSED FOODS FROM SOYBEANS
Tomoei Kanno, Chibaken, and Harunobu Kobayashi, Tokyo, both of Japan, assignors to Shawa Sangyo Kabushiki Kaisha, Tokyo, Japan
Filed June 2, 1970, Ser. No. 42,863
Int. Cl. A23l *1/20*
U.S. Cl. 99—17 6 Claims

Treating soybeans for use in processed foods, by submerging whole soybeans in water containing 0.1 to 0.5% of sulfurous acid and mother starter of lactic acid bacteria, crushing, skinning, and steaming said soybeans, and subjecting said soybeans to fermentation by inoculating a culture of microorganisms possessing proteolytic and soybean cotyledon cell macerating activity and then drying and pulverizing said soybeans.

3,718,480
PASTA
Maurice Robert Tremblay, Bramalea, Ontario, and Richard Launt Maurer, Mississauga, Ontario, both of Canada, assignors to Thomas J. Lipton Limited, Toronto, Ontario, Canada
Continuation-in-part of Ser. No. 105,098, Jan. 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 37,350, May 14, 1970, abandoned. This application Feb. 7, 1972, Ser. No. 224,252
Int. Cl. A23l *1/16*
U.S. Cl. 99—85 10 Claims

Preparation of a wheat flour pasta by preparing a dough, shaping the dough into individual pasta pieces, pre-drying the pieces to a moisture content between 22 and 27 per cent by utilizing warm dry air and then drying the pasta to between 8 and 13 per cent moisture by application of microwave energy. The use of microwave energy materially reduces the overall drying time and produces a pasta with a shortened rehydrating time and less microbiological buildup.

3,718,481
FISH FILLET PRODUCT AND METHOD FOR MAKING
Jean Joaquin, Fairfax, Calif.
(2 Niven Way, Larkspur, Calif. 94939)
Filed Mar. 6, 1968, Ser. No. 710,834
Int. Cl. A23l *1/325*
U.S. Cl. 99—111 11 Claims

A ready-to-cook seafood product comprised of a pair of fish fillets forming an enclosure for a stuffing material which remains substantially sealed to prevent loss of moisture and flavor juices even during the subsequent cooking of the product prior to eating. The method for making the product, which can be stored in a frozen state until ready for use, comprises the steps of filleting a flat type fish to provide two boneless fillets of approximately the same size, depositing a chilled edible stuffing material on one fillet, placing the other fillet over the stuffing material and folding it downwardly into contact with the first fillet and forming a peripheral edge seal between the two fillets forming an enclosure for the stuffing material.

3,718,482
A FOOD COMPOSITION WITH ISOASCORBIC ACID-PHOSPHATE AS AN ANTIOXIDANT
David F. Hinkley, Plainfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.
Continuation-in-part of Ser. No. 816,771, April 16, 1969, abandoned. This application May 6, 1971, Ser. No. 140,998
Int. Cl. A23l *3/00*; C07d *5/12*
U.S. Cl. 99—150 9 Claims

Novel isoascorbic acid phosphates and salts thereof, useful as antioxidants, are prepared by phosphorylating 5,6-O-loweralkylidene isoascorbic acid. Also, antioxidant compositions and methods of inhibiting oxidation in preserved foods and beverages are included.

3,718,483
METHOD FOR PREPARING STORAGE-STABLE BAKERY PRODUCTS WITHIN HERMETICALLY SEALED CONTAINERS
James W. Davis, Winston-Salem, N.C., and Anthony P. Umina, Hopkinton, and Nancy J. Kelley, Natick, Mass., assignors to the United States of America as represented by the Secretary of the Army
No Drawing. Filed Nov. 18, 1970, Ser. No. 90,796
Int. Cl. A21d *8/06*
U.S. Cl. 99—182 6 Claims

Storage-stable bread and cake products are produced within rigid, hermetically sealed containers by partially filling a metal can with a batter or dough mixture that is characterized by having a moisture content substantially less than that of a normal batter or dough and having ¼ to ⅗ the normal amount of chemical leavening agent, hermetically sealing the can under a vacuum of from 10 to 30 inches of mercury and cooking the contents within the sealed container.

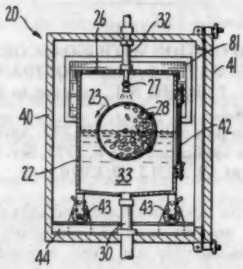
3,718,484
SOLIDIFIED PRODUCT FROM HIGH FRUCTOSE CORN SYRUP AND PROCESS FOR THE PREPARATION THEREOF
Elmer F. Glabe, Chicago, Ill., assignor to Food Technology, Inc., Chicago, Ill.
Filed Aug. 20, 1970, Ser. No. 65,737
Int. Cl. A23l *1/08*
U.S. Cl. 99—199 10 Claims

Dehydrating high fructose corn syrup by slurrying the syrup with ungelatinized starch having a gelatinization temperature of at least 150°F heating the slurry at 15° to 30° degrees below the gelatinization temperature of the starch to condition the starch such that it will only partially gelatinize when the slurry is dried; subsequently drying the slurry in a thin film on a heated surface while simultaneously partially gelatinizing the starch therein.

3,718,485
FOOD DEHYDRATION METHOD
Marion P. Lankford, Fremont, Calif., assignor to Vacu-dry
Filed July 1, 1970, Ser. No. 51,535
Int. Cl. A23b *7/02*, *7/03*
U.S. Cl. 99—204 4 Claims

A method for uniformly controlling the amount of medium and moisture residuals in processes for dehydrating particulate comestibles by contact with a heated liquid heat transfer medium within an evacuated drying region wherein each piece of comestible alternately is moved into contact with circulating medium to heat and vaporize its contained-moisture and then removed from such contact substantially into an adjacent

vapor space to release a major portion of the vaporized moisture directly into that space and food products having



unique structure and composition which are produced by such method.

3,718,486

METHOD OF PACKAGING FOODSTUFFS AND A PACKAGING FOR EMPLOYING THE METHOD

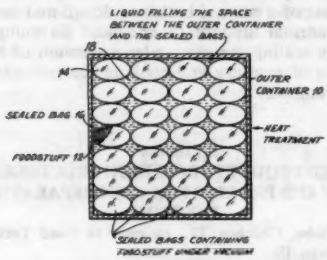
Jens-Lauge Bolund Jensen, 400 Roskilde, Fyrrevej 18, Denmark

Filed Sept. 15, 1970, Ser. No. 72,503

Claims priority, application Denmark, Sept. 18, 1969, 4982/69

Int. Cl. A231 *3/10*

U.S. Cl. 99—214 **2 Claims**



A method and a packaging assembly for packaging foodstuffs which are to be preserved by the application of heat and comprising steps of wrapping the foodstuffs in thin, heat-resistant, gas and liquid-tight bags, evacuating and sealing the bags, depositing one or more sealed bags in receptacles, filling up the receptacle with a heat-transmitting liquid which dampens the movement of the bags within the receptacle and alleviates impact by external forces, and sealing the receptacle, which can then be subjected to heat treatment for the preservation of the food contents.

3,718,487

PANCAKE-MAKING MACHINE

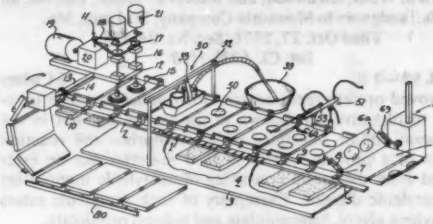
Fred William Brunner, Eugene, Oreg., assignor to Mannings, Inc., San Francisco, Calif.

Filed Feb. 12, 1971, Ser. No. 114,958

Int. Cl. A47J *37/06*

U.S. Cl. 99—353 **5 Claims**

An apparatus for continuously making pancakes is described. The apparatus includes a series of griddle plates pivotally mounted on an endless conveyor, a blade arranged to travel between a griddle plate and partially cooked pancakes thereon and a device for swinging each plate about its axis so as to transfer partially cooked pancakes thereon to the next



forward plate in the direction of travel with the pancakes in an upside-down position.

3,718,488

PRECIOUS METAL DECORATING COMPOSITIONS CONTAINING BIS-CHELATE DERIVATIVES OF PALLADIUM

Swiatoslaw Trofimenko, Newark, and Lawrence G. Vaughan, Wilmington, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 792,847, Jan. 21, 1969. This application March 2, 1971, Ser. No. 120,303

Int. Cl. C23c *3/04*

U.S. Cl. 106—1 **10 Claims**

Precious metal decorating compositions containing bis-chelate derivatives of palladium are useful in forming decorative films having high thermal stability. These precious metal decorating compositions are suitable for application to various substrates including glass, quartz, alumina, and other ceramic materials.

3,718,489

INSULATING CASTABLE

James A. Crookston, and Glen W. Charles, both of Mexico, Mo., assignors to A. P. Green Refractories Co., Mexico, Mo.

Filed Jan. 4, 1971, Ser. No. 103,793

Int. Cl. C04b *35/02, 35/10*

U.S. Cl. 106—64 **6 Claims**

The disclosure concerns an insulating refractory castable useable at temperatures above 2,800°F., and specifically an insulating refractory castable useable at 3,000°F. which has a bulk density of from 82 to 88 pounds per cubic foot in place. The product comprises 60–70 percent of a size graded acid and/or alumina refractory aggregate, 5 to 15 percent expanded clay aggregate of a density of from 9–11 pounds per cubic foot, and from 15 to 35 percent calcium aluminate cement.

3,718,490

PROCESS FOR PURIFICATION OF REFRACTORY METAL NITRIDES

Cyril Alfred Morgan, E. Molesey; Scott Gordon Arber, Chessington, and Oswald William John Young, Surbiton, all of England, assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Dec. 9, 1970, Ser. No. 96,652

Claims priority, application Great Britain, Dec. 16, 1969, 61,357/69

Int. Cl. C04b *35/58;* C01b *21/06*

U.S. Cl. 106—65 **7 Claims**

Carbon is removed from refractory metal nitrides, such as aluminum nitride, by heating the impure nitride with boric oxide in an atmosphere of nitrogen at a temperature of about 1,200 °–2050°C. Boron nitride is formed and provides a valuable mixture of boron nitride and refractory metal nitride.

3,718,491

PROCESS FOR SILICATE-PERLITE STRUCTURES

Paul C. Yates, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 744,297, July 12, 1968, abandoned. This application Feb. 19, 1971, Ser. No. 117,109
Int. Cl. C04b *43/00*
U.S. Cl. 106—84 7 Claims

Water resistant silicate-perlite insulation materials are made by mixing an aqueous solution of an alkaline ionic silicate and a colloidal amorphous silica sol, adding perlite to said mixture, molding the combined mixture into the desired shape and exposing said shaped article to an acidic substance to set the article rapidly and provide immediate water resistance.

3,718,492

REFRACTORY ALUMINOUS CEMENTS

Alexandru I. Braniski, Teodor Ionescu, and Nicolae Deica, Bucharest, Rumania, assignors to Institutul de Cercetari Metalurgice, Bucharest, Rumania

No Drawing. Filed Mar. 30, 1970, Ser. No. 24,029
Claims priority, application Rumania, May 27, 1969, 60,093
Int. Cl. C04b *7/32*
U.S. Cl. 106—104 3 Claims

The known refractory aluminous cements are made of alumina and limestone, e.g. of calcium aluminate $CaO.Al_2O_3$ and dialuminate $CaO_2.Al_2O_3$ (hydraulic reimpurities.

The high quality calcium and magnesia aluminous refractory cements of the present invention, are obtained from any kind of natural or artificial raw materials containing calcium, mixed with natural or artificial raw materials containing magnesia and in mixes in succession with natural or artificial hydrated or nonhydrated raw materials containing aluminum oxide in suitable stoichiometric proportions, by burning until sintering or melting, which assures spinel formation, $MgO\text{-}Al_2O_3$ (superrefractory constituent) and of calcium aluminate $CaO.Al_2O_3$ and dialuminate $CaO_2.Al_2O_3$ (hydraulic refractory constituents).

3,718,493

PROCESS FOR THE PRODUCTION OF CARBON FILAMENTS FROM COAL TAR PITCH

Louis A. Joo, Johnson City, John A. McKee, Elizabethton, and Frederick L. Shea, Johnson City, Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

No Drawing. Original application June 4, 1968, Ser. No. 734,257, now Patent No. 3,595,946. Divided and this application Oct. 28, 1970, Ser. No. 84,896
Int. Cl. C08h *13/00*; C09d *3/24*
U.S. Cl. 106—273 R 1 Claim

Carbon filaments are made from specially treated high temperature coal tar pitch. The pitch is filtered, heat treated and its low molecular weight components are removed by distillation. The treated pitch is spun into filaments, the filaments partially oxidized and then carbonized under carefully regulated conditions to yield filamentary carbon having a tensile strength of more than 100,000 p.s.i. The filaments may be graphitized.

3,718,494

SHEET-LIKE ALPHA ALUMINUM OXIDE

Howard W. Jacobson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed March 4, 1971, Ser. No. 121,001
Int. Cl. C08h *17/04*
U.S. Cl. 106—291 2 Claims

Single crystals of alpha aluminum oxide are prepared in the form of sheet-like particles having an average thickness of 10 to 250 μ and major faces averaging 15 to 1,000 $m\mu^2$. The particles find utility in reinforcement of plastics and can also be coated with TiO_2 to give a lustrous pigment.

3,718,495

HEAT-SHRINKABLE PRESSURE-SENSITIVE ADHESIVE TAPE

Jun Tomita, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 513,537, Dec. 13, 1965, abandoned. This application Feb. 12, 1971, Ser. No. 115,093
Int. Cl. C09j *7/02*; B05c *3/107*
U.S. Cl. 117—7 8 Claims

Heat-shrinkable electrically insulative pressure-sensitive adhesive tape made from 1) a backing selected from polyethylene terephthalate and polyvinyl chloride backings that shrink at a useful elevated temperature at least twice as much in length as in width and shrink within the ranges of 10–50 percent in length and 0–15 percent in width and 2) a pressure-sensitive adhesive that exhibits a high shear strength and a high viscosity.

3,718,496

TEXTURED CAUL PLATE SURFACED WITH FURNACE CEMENT

Jack August Willard, Hamilton, Ohio, assignor to Formica Corporation, Cincinnati, Ohio

Filed Nov. 16, 1970, Ser. No. 90,050
Int. Cl. B32b *3/14, 15/14*; B44c *1/20*
U.S. Cl. 117—10 6 Claims

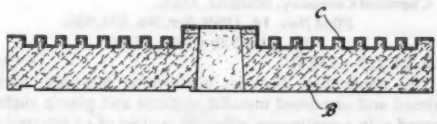
A design imparting plate which used in the manufacture of decorative laminates is produced by the process of applying a coating of a viscous cementitious material onto a rigid metal plate; sculpturing a three dimensional design thereon and then heating the coated plate to permanently affix the sculpture design to the base plate.

3,718,497

HEATER COIL SUPPORT

Hal H. Rice, Birmingham, Mich., assignor to General Motors, Detroit, Mich.

Filed Nov. 19, 1970, Ser. No. 90,943
Int. Cl. H05b *3/68*
U.S. Cl. 117—35 R 7 Claims



An infrared radiant type heating coil support and method for forming same, wherein the support block is a ceramic fibrous plate of low mass but having good mechanical strength and low shrinkage under the repeated heating and cooling cycling encountered in normal use and having a dull finish, craze resistant coating including an infrared reflecting metal oxide selected from the group of zirconia, titania, tin oxide and Uverite.

3,718,498

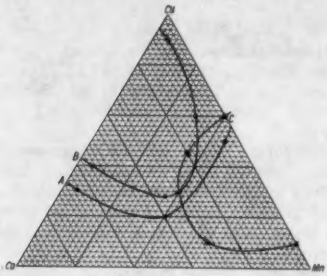
CATALYTIC COMPOSITION

Patrick John Denny, and Dennis Albert Dowden, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed March 29, 1971, Ser. No. 128,684
Int. Cl. B44d *1/02*
U.S. Cl. 117—97 9 Claims

By coating the internal surface of a cooking oven with a catalytic composition comprising porous mutually sintered

vitreous enamel particles and finely divided transition metal oxides including copper oxide with the oxides of cobalt or manganese or both, the surfaces are rendered substantially



self-cleaning. Preferred compositions are disclosed for situations in which (a) build-up of deposits is to be minimized, or (b) rapid removal of deposited fat is required.

3,718,499

PROCESS FOR PROTECTING FERROUS BASE METALS AGAINST CORROSION, AND ARTICLES PRODUCED THEREBY

Jerome J. Kanter, 12300 Hobart Ave., Palos Park, Ill. 60464

No Drawing. Filed Aug. 10, 1970, Ser. No. 62,719

Int. Cl. C23f *7/04, 11/00*

U.S. Cl. 117—127 **13 Claims**

Iron, steel and other ferrous base metal articles are protected against corrosion, such as water and steam corrosion, by a process in which such articles are treated with a pyrochlore-microlite mineral, containing Group V metal constituents, in an alkaline water medium.

3,718,500

COATED ARTICLES

Edwin B. Nyquist, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 14, 1969, Ser. No. 876,996

Int. Cl. B32b *15/08, 27/30*

U.S. Cl. 117—132 R **6 Claims**

This application discloses non-porous substrata, such as primed and unprimed metallic surfaces and plastic surfaces, coated with a continuous adherent coating of an interpolymer composed essentially of from 0.1 to 20 weight percent of an adhesion promoting monomer which is an alkyl amino alkyl acrylamide such as N,N -dimethylaminoethyl methacrylamide with the remainder of the interpolymeric composition being made up of at least one monoethylenically unsaturated comonomer.

3,718,501

OIL REPELLENT TEXTILE FINISH

Richard Frederick Stackel, and George Robert Depaolo, both of Bridgewater Township, Somerset County, N.Y., assignors to American Cyanamid Company, Stanford, Conn.

Division of Ser. No. 678,180, Oct. 26, 1967, Pat. No. 3,524,907. This application April 23, 1970, Ser. No. 43,301

Int. Cl. C08j *1/44*

U.S. Cl. 117—139.5 A **3 Claims**

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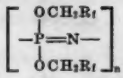
Polyfluoro alkyl esters of polymeric phosphonitrilic acid (Formula I) having average molecular weights in the range of 5,000–10,000, a method for making the polymers, and the use of the polymers in oil and water repellent finishes for cellulosic textile materials.



I

R_f is a perfluoroalkyl group of at least two carbon atoms, preferably of at least three carbon atoms, and n is the number of units required for an average molecular weight between 5,000 and 10,000.

3,718,502

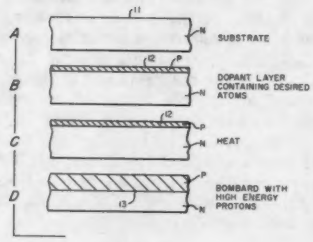
ENHANCEMENT OF DIFFUSION OF ATOMS INTO A HEATED SUBSTRATE BY BOMBARDMENT

James F. Gibbons, 735 De Soto Drive, Palo Alto, Calif.

Filed Oct. 15, 1969, Ser. No. 866,692

Int. Cl. B44d *1/18, 1/20*

U.S. Cl. 117—212 **29 Claims**



This invention describes a method of enhancing the diffusion of atomic species carried on the surface of a solid substrate into the substrate by elevating the temperature of the substrate to permit atoms and vacancies to propagate and then creating vacancies in selected regions of the substrate through bombardment by a beam of protons or other particles, said bombard-ment acting to enhance diffusion of the surface atom species into the substrate at said regions.

3,718,503

METHOD OF FORMING A DIFFUSION MASK BARRIER ON A SILICON SUBSTRATE

William B. Glendinning, Belford, and Wellington B. Pharo, Neptune, N.J., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Continuation-in-part of application Ser. No. 124,915, Mar. 16, 1971. This application July 14, 1971, Ser. No. 162,688

Int. Cl. B44d *1/18, 1/02;* **C23f** *13/00*

U.S. Cl. 117—212 **5 Claims**

The top surface of a silicon substrate having a particular impurity profile is exposed to a chemical vapor environment of nitric oxide, hydrogen fluoride and water at about 35 degrees C., and for about 3 to 5 minutes. Simultaneously with the exposure to the above-described vapor mixture, an image is projected onto the top surface of the silicon substrate during the entire time interval of vapor exposure. For completion of device fabrication, dopant atoms are then diffused into the silicon surface where the image has been projected.

3,718,504
PROCESS FOR EXTRACTING SUGARS FROM CATTLE MANURE

Barron S. Whittingham, Culver City, Calif., assignor to Feed Recycling Co., Ripley, Calif.

No Drawing. Continuation-in-part of application Ser. No. 111,751, Feb. 1, 1971. This application June 12, 1972, Ser. No. 261,795

Int. Cl. C13k *1/02*

U.S. Cl. 127—37 8 Claims

Process for extracting sugars from the cellulosic residue of cattle manure. The manure is first treated to remove protein and proteinaceous compounds. The cellulosic residue is then treated in water with sulphur dioxide (SO_2), or sodium hydrosulfite ($Na_2S_2O_4$), which acts as a reducing agent, and it is then subjected to an acid hydrolysis reaction to convert to sugars, after which the sugars are removed.

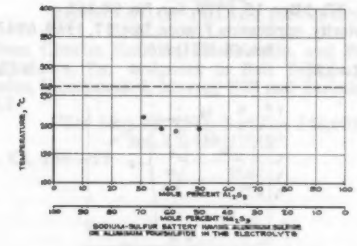
3,718,505
SODIUM-SULFUR BATTERY HAVING ALUMINUM SULFIDE OR ALUMINUM POLYSULFIDE IN THE ELECTROLYTE

John J. Werth, Princeton, N.J., assignor to ESB Incorporated

Filed Dec. 7, 1971, Ser. No. 205,560

Int. Cl. H01m *35/02*

U.S. Cl. 136—6 7 Claims


TEMPERATURE, °C
MOLE PERCENT Al_2S_3
MOLE PERCENT Na_2S_3
SODIUM-SULFUR BATTERY HAVING ALUMINUM SULFIDE OR ALUMINUM POLYSULFIDE IN THE ELECTROLYTE

A reduced operating temperature for a sodium-sulfur battery is achieved with a new electrolyte comprising sodium polysulfide, aluminum sulfide or aluminum polysulfides, and free sulfur when the electrodes are in the charged condition. The electrolyte, which has a melting point in the range of approximately 200° C., permits the battery to be sealed with polytetrafluoroethylene sealing materials. Based on presently limited data, it appears that the reduced melting point temperature of the electrolyte can be obtained with solutions in which the ratio of the mole percent of sodium polysulfide to the mole percent of aluminum sulfide or aluminum polysulfide varies considerably.

3,718,506
FUEL CELL SYSTEM FOR REACTING HYDROCARBONS

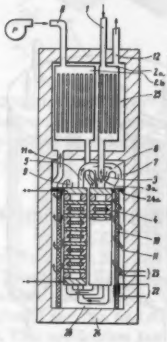
Wilfried Fischer, Neckargemund, and Franz-Josef Rohr, Ober-Absteinach, both of Germany, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Feb. 22, 1971, Ser. No. 117,381

Int. Cl. H01m *27/00*

U.S. Cl. 136—86 C 6 Claims

A fuel cell system of the high temperature type includes one or more fuel cells operating with an electrolyte such as an oxygen ion conductive solid or a carbonate melt to which fresh reaction gases containing hydrocarbon fuel and oxygen respectively are fed after preheating in heat exchangers. The system may also include a separate reformer for converting the hydrocarbons into hydrogen and other gases. A portion of the exhaust gases from the fuel side of the cell is recycled through the fuel cell by entrainment with fresh fuel gas by means of the aspirating effect of a nozzle through which fresh fuel gas is injected into the cell and the remainder of the exhaust gas from the fuel side together with oxygen impoverished gas discharged from the cell are led to an after-combustion catalyst in the form of a tubular structure surrounding the fuel cells and also the reformer component if one is utilized for burning of the remaining hydrocarbon content



of the fuel gas. The heat generated during the after-burning phase in the catalytic zone is mostly transferred over a very short path to the fuel cells to maintain the fuel cells at their proper operating temperature and to supply the power requirements of the reformer if the latter is utilized. The remaining heat in the exhaust gases is conducted to the exchangers for heat transfer to the incoming fresh reaction gases.

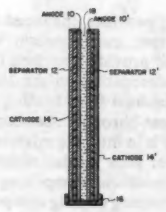
3,718,507
BI-CELL UNIT FOR FUEL CELL

David Linden, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed March 24, 1971, Ser. No. 127,486

Int. Cl. H01m *27/30, 29/02*

U.S. Cl. 136—86 R 1 Claim



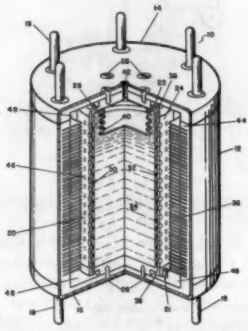
A bi-cell unit is provided for a fuel cell. The bi-cell unit is comprised of two electrode packs. Each of the electrode packs includes an anode, an air cathode, and a separator between the anode and the cathode. The two packs are assembled together with the anodes spaced apart and facing each other, the space between the anodes defining an anolyte chamber through which a liquid mixture of fuel and electrolyte is circulated.

This invention relates in general to a bi-cell unit for a fuel cell and in particular, to a bi-cell unit for a hydrazine-air fuel cell.

3,718,508
DEFERRED-ACTION BATTERY COMPRISING A PERFORATED AMPOULE SEALED WITH REMOVABLE PLUGS

Seymour Levine, 26 Clarendon Terrace, Dover, N.J.

Filed Aug. 30, 1971, Ser. No. 175,847
Int. Cl. H01m 2/00
U.S. Cl. 136—90 4 Claims



This invention relates to an automatically activated delay action battery, containing an electrolyte, sealed in an ampoule of novel design. This novel ampoule comprises a perforated container whose perforations are sealed with removable plugs, and a slidably mounted sleeve with misaligned holes over the container restraining the plugs. Set-back force slides the sleeve to align the holes with the perforations and centrifugal force causes the electrolyte to dislodge the plugs and flow into contact with the plates to activate the battery.

3,718,509
COATED METAL AND METHOD

Victor V. Germano, Mentor-on-the-Lake, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 729,932, May 17, 1968, abandoned. This application Feb. 3, 1971, Ser. No. 112,429
Int. Cl. C23f 7/26
U.S. Cl. 148—6.2 19 Claims

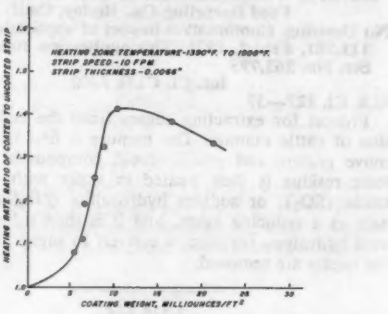
A composite coating provides enhanced corrosion protection for metal substrates, can maintain weldability where otherwise desirable and provide a surface for receiving electrocoat paint. The undercoating on the surface of the substrate is the residue obtained from heating an applied corrosion-resistant, hexavalent-chromium-containing coating composition, which residue is in intimate mixture with pulverulent metal. The coating over such residue results form curing an applied topcoat composition comprising additional hexavalent-chromium-containing coating composition.

3,718,510
METHOD FOR INCREASING THE HEATING RATE IN CONTINUOUS ANNEALING PROCESSES

Edward J. Patula, Monroeville; Robert R. Somers, Penn Hills Township, and William L. Roberts, Franklin Township, Westmoreland Cty., all of Pa., assignors to United States Steel Corporation

Filed Feb. 16, 1971, Ser. No. 115,456
Int. Cl. C21d 1/48
U.S. Cl. 148—14 4 Claims

Alkali metal silicate coatings are applied to steel sheet or strip material to increase the emissivity of the material undergoing heating and/or cooling under substantially radiative conditions. The heating rate of the sheet material is markedly

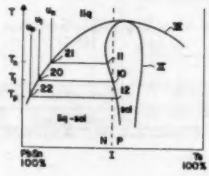

HEATING ZONE TEMPERATURE-1390°F. TO 1000°F.
STRIP SPEED-10 FPM
STRIP THICKNESS-0.0066"
HEATING RATE RATIO OF COATED TO UNCOATED STRIP
COATING WEIGHT, MILLIOUNCES/FT²

increased with the application of coating thicknesses within the range of about 5 to 20 milliounces/ft².

3,718,511
PROCESS FOR EPITAXIALLY GROWING SEMICONDUCTOR CRYSTALS

Michel Moulin, Chilly-Mazarin, France, assignor to Thomson-CSF

Filed Dec. 15, 1970, Ser. No. 98,262
Claims priority, application France, Dec. 17, 1969, 6943698
Int. Cl. H01l 1/00
U.S. Cl. 148—171 9 Claims



A semiconductor with a P/N junction, adapted to be used as a detector or emitter of luminous radiation, is grown from a bath consisting of a liquefied mixture of three elements which are the constituents of two alloys or solid solutions taken from Groups II/VI and/or IV/VI of the Periodic Table. The proportions of the three elements in the mixture are so chosen that the solidus curve of the temperature/composition diagram intersects the stoichiometric line at a point lying along the boundary between the solid and the solid/liquid phase on the side of the lower concentrations of the element common to the two alloys. In a state of thermodynamic equilibrium for the liquid/solid phase, the bath is slowly cooled in a temperature range above or below a critical temperature corresponding to the point of intersection with resulting growth of an N-type or P-type layer on a substrate immersed in the bath. By a change in the composition, with or without a shift in temperature, the conductivity type of the layer is altered with formation of a P/N junction.

3,718,512
POROUS PARTICLES CONTAINING DISPERSED ORGANIC LIQUID AND GASEOUS COMPONENTS

Gerald L. Hurst, Dallas, Tex., assignor to Kinetics International Corporation, Dallas, Tex.

Filed Oct. 8, 1970, Ser. No. 79,039
Int. Cl. C06b 1/04
U.S. Cl. 149—2 30 Claims

Economical and effective cap sensitive explosive compositions are manufactured by combining appropriate proportions

of a non-cap sensitive organic liquid containing oxidizing groups with a porous substrate. The preferred liquid is nitromethane or nitromethane diluted with a hydrocarbon. The preferred substrate is a finely divided ionic nitrate powder. The explosive compositions are rendered cap sensitive and highly brisant by providing a substrate which disperses the organic liquid while maintaining this fluid in intimate contact with dispersed air. The preferred finely divided ionic nitrate substrates used in the present invention are prepared by grinding to the desired particle size, preferably less than 500 microns.

3,718,513

MINE STERILIZATION BY MEANS OF A DELIQUESCENT ADDITIVE

Maurice Baer and Joseph H. Severini, Morris, N.J., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Jan. 25, 1971, Ser. No. 109,629

Int. Cl. C06c *1/00*

U.S. Cl. 149—24 **13 Claims**

Self-sterilization capability is imparted to a chemically oriented mine by the incorporation into the active explosive of a material which is hygroscopic and deliquescent. The latter material absorbs moisture from the atmosphere and deliquesces into an aqueous solution which reacts with the active explosive rendering it less sensitive and ultimately sterilized and safe to handle.

3,718,514

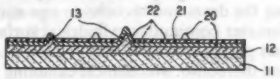
REMOVAL OF PROJECTIONS ON EPITAXIAL LAYERS

William Charles Erdman, Danielsville, and Paul Miller, Allentown, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed May 28, 1971, Ser. No. 148,081

Int. Cl. H01l *7/50*

U.S. Cl. 156—17 **8 Claims**



A method for removing projections from the surface of epitaxially-deposited semiconductor layers is described. These projections can adversely affect the results of photolithographic processing. The method involves producing an oxide layer on the surface and applying a discontinuous film to the oxide in such a manner that the discontinuities preferentially align with the projections. By means of a series of etching steps, the projections are selectively removed without affecting the integrity of the epitaxial layer.

3,718,515

PROCESS FOR MANUFACTURING SHAPED ENERGY TRANSMISSION ARRAYS

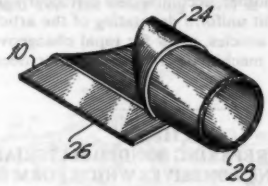
Amnon Goldstein, Forest Hills, N.Y., assignor to Decicom Systems, Inc.

Division of Ser. No. 709,474, Feb. 29, 1968, Pat. No. 3,544,192. This application June 29, 1970, Ser. No. 60,183

Int. Cl. B65h *54/00*

U.S. Cl. 156—174 **3 Claims**

A shaped energy transmission array made by forming an energy transmission sheet having a plurality of channels therein, a pair of opposed edges defining a plurality of discrete inputs to said channels and a plurality of discrete outputs from said channels respectively, bending the sheet along a line intermediate the pair of opposed edges so that portions of the sheet are in overlapping relation, shaping the portion of the sheet extending normally from the first of said pair of opposed edges to the desired shape whereby the first edge defines the desired shape, and fixing the conformation of the shaped array. The array may be formed from a plurality of filaments



such as electrical conductors or fiber optical filaments aligned in side by side relation so that the pair of opposed edges are defined by the opposed ends of the filaments.

3,718,516

PROCESS FOR PRODUCTION OF INTERLAYER SAFETY-GLASS

Francis T. Buckley, Hampden; Raymond F. Kiek, Wilbraham, and Donald I. Christensen, East Longmeadow, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 683,487, Nov. 16, 1967, Pat. No. 3,556,890. This application Jan. 11, 1971, Ser. No. 105,722

Int. Cl. B32b *17/10, 31/12*; C03c *17/00*

U.S. Cl. 156—106 **4 Claims**

This invention relates to an improvement in the process for preparing laminated safety-glass wherein glass sheets are washed and then laminated to a poly(vinyl acetal) interlayer, the improvement which comprises adjusting the salt content of the final rinse water for the glass sheets so as to provide a salt content in the range of from 50 to 500 parts per million. The resulting laminates are found to have increased impact strength.

3,718,517

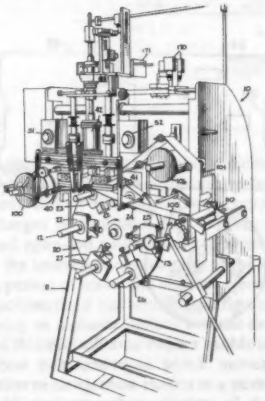
METHOD AND APPARATUS FOR DECORATING ARTICLES

Thomas L. Berg, 1110 23rd Street, North Bergen, N.J.

Filed Feb. 19, 1970, Ser. No. 12,714

Int. Cl. B32b *31/10, 31/20*

U.S. Cl. 156—234 **30 Claims**



A method and apparatus for decorating the outer surface of an article or ware wherein the article is initially positioned on a holding mandrel mounted to a rotary table while at a loading station. The article is subsequently advanced to a decorating station whereat a layer of transfer material is interposed between the article and a printing die. The transfer material is

caused to engage the article being decorated with the die being moved across the outer surface thereof whereby a portion of the transfer material is caused to adhere to the article. Further means are provided to register the articles with respect to one another, accommodate surface irregularities on the article, permit uniform decorating of the article, accommodate tapered articles, allow for rapid changeover and adjustment of the machine, permit multi-color decorating, as well as others.

3,718,518

PROCESS OF PREPARING BONDED MATERIALS USING POLYURETHANE ADHESIVES WHICH FORM BONDS OF IMMEDIATE HIGH STRENGTH

Eugen Bock, Leverkusen, and Manfred Dollhausen, Hitdorf, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 9, 1970, Ser. No. 44,870
Claims priority, application Germany, June 19, 1969, P 19 30 336.7
Int. Cl. B29c *3/00*; C09j *3/16, 5/02*
U.S. Cl. 156—242 8 Claims

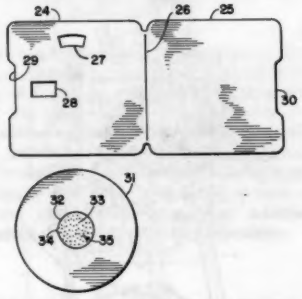
A method of providing bonded materials having a high resistance to separation immediately after bonding at room and at elevated temperatures using a hydroxyl polyurethane adhesive having a molecular weight of at least 50,000 prepared from organic diisocyanate, hydroxyl polyesters having a molecular weight of from 2,000 to 10,000 and 0.1 to 0.7 mol per mol of polyester of an alkane diol having at least four carbon atoms in the molecule. A solvent solution of the adhesive is applied to at least one of the surfaces of the articles to be bonded together and heated to a temperature of at least 70°C. to both activate the adhesive and evaporate the solvent. Immediately following the heat treatment the surfaces are pressed together forming an immediate high strength bond which is highly resistant to separation.

3,718,519

METHOD OF MAKING FLAT ROTATABLE DISC ASSEMBLIES

Donald Lee Montgomery, 12621 Victoria Ave., Los Angeles, Calif. 90066

Filed July 21, 1971, Ser. No. 164,694
Int. Cl. B32b *31/00*; G06c *27/00*
U.S. Cl. 156—250 5 Claims



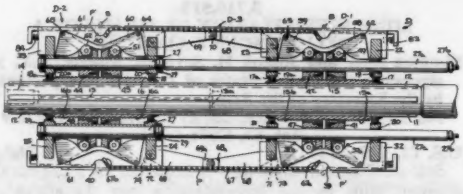
A rotatable disc assembly includes top and bottom panels sandwiching a disc therebetween. Rather than the usual grommet for rotatably mounting the disc, a concentric disc is cut in the disc material and its top and bottom surfaces are glued to the top and bottom panels respectively. The concentric disc thus serves as a bearing for the disc itself.

3,718,520

TIRE BUILDING DRUM

Jean Leblond, Compiegne, France, assignor to Uniroyal Englebert France S.A., Neuilly sur Seine, France

Filed June 30, 1970, Ser. No. 51,227
Claims priority, application France, July 1, 1969, 6922235
Int. Cl. B29h *17/26*
U.S. Cl. 156—400 15 Claims



A radially expansible and axially contractable single-stage tire building drum, especially suited for building tire carcasses of high stiffness ply material having metallic wire cords or cables incorporated therein, is disclosed. The drum has two axially spaced, radially split cylindrical drum end sections arranged for opposed joint axial movements and each composed of rigid, circumferentially aligned, cylindrical sector-shaped elements, and an elastically radially expansible tubular diaphragm surrounding the space between the drum members and circumferentially secured to the latter at its ends. In the radially smallest and axially largest condition of the drum, the two drum end sections and the diaphragm, the latter at that time being internally rigidly supported by an internal lever system linking the drum end sections to one another, define a minimum diameter continuous cylindrical surface for receiving the carcass ply material and enabling the bead cores to be loosely slipped thereonto. Mechanical camming means including screw-actuated rollers operatively engaging the sector-shaped elements are provided for forcing the same radially outwardly under high unyielding forces to cause the carcass ply material to be tightly clamped against the surrounding bead cores, which minimizes the possibility of slippage of the ply material relative to the bead cores during the ply turn-up operation and during the subsequent shaping operation as the carcass is inflated and expanded radially outwardly while the drum end sections are displaced axially inwardly of the drum.

This abstract is not to be taken either as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,718,521

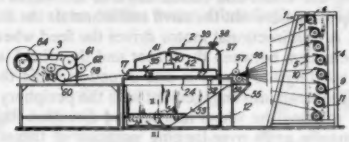
APPARATUS FOR IMPREGNATING YARNS, AND MORE PARTICULARLY GLASS YARNS, WITH SYNTHETIC RESINS

Andre Violleau, Vitrolles-le-Roucas, Rene Louis Coffy, Marseille, and Bernard Robert Laurent Marie Bancal, St.-Gratien, France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed July 24, 1970, Ser. No. 58,056
Claims priority, application France, July 29, 1969, 6925874
Int. Cl. B65h *75/00*
U.S. Cl. 156—433 5 Claims

Impregnating apparatus is provided which includes a support for at least one spool of yarn to be impregnated, an impregnating unit formed by two chambers within a single enclosed space, a first chemical processing chamber

and a second chamber for providing mechanical processing in conjunction with a dipping of the yarn or yarns into



a resin bath, means for heating said chambers, and drawing and winding means.

3,718,522

METHOD AND APPARATUS FOR PRODUCING A HOLLOW BODY FROM A HELICALLY WOUND STRAND

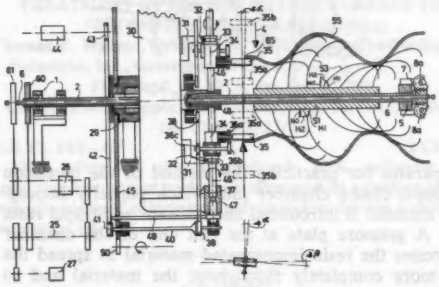
Wolfgang Arnold, Sonnenhalde, D-7241 Vespersweiler, Germany

Filed Feb. 16, 1970, Ser. No. 11,806

Claims priority, application Germany, Feb. 14, 1969, P 19 07 355.3

Int. Cl. B65c 9/04

U.S. Cl. 156—448 **22 Claims**



A method and apparatus for forming a hollow, generally tubular, body of noncylindrical shape from a helically wound strand of a material which will firmly bond to itself upon contact, e.g. a thermoplastic. The strand is continuously deposited, onto and in contact with the last helical winding of the hollow body as the body is being continuously and simultaneously rotated and moved along its longitudinal axis, and the radial distance from the horizontal axis of the hollow body of the point of contact between the deposited strand and the last helical winding is gradually varied in accordance with the desired shape of the body. Simultaneously, the speed of rotation of the hollow body is varied in accordance with the variation of the radial distance of the contact point to maintain the peripheral speed at the contact point constant. A number of specific embodiments of apparatus for forming a body in this manner are disclosed.

3,718,523

TIRE BEAD WRAPPING MACHINE

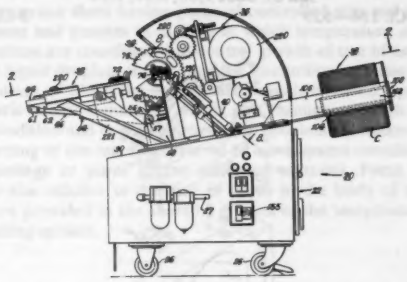
Edwin E. Mallory and William S. Mapel, Niles, Mich., assignors to National-Standard Company, Niles, Mich.

Filed Apr. 21, 1971, Ser. No. 135,970

Int. Cl. B29h 7/22, 17/34

U.S. Cl. 156—460 **14 Claims**

A tire bead wrapping machine designed to automatically feed the cord to the shuttle from a spool mounted remote from the shuttle. A cord feeding assembly uses a pair of gripping fingers to bring the end of the cord to a cord feeding position adjacent one side of the shuttle, from which position the free end is picked up by the accumulator assembly at the start of a bead wrapping cycle. The excess cord is stored on the accumulator spools as the shuttle rotates about the bead. When a sufficient length of cord for one wrapping cycle is removed from



the spool, a cord cutting assembly severs the cord and holds the free end of the cord coming from the spool, which free end is gripped by the gripping fingers and conveyed to the cord feeding position to prepare the machine for the next bead wrapping cycle.

3,718,524

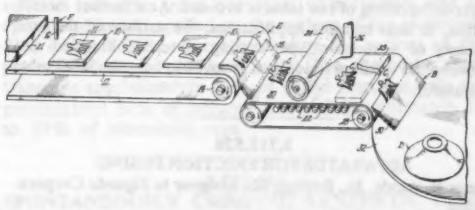
APPARATUS FOR FORMING ATTACHABLE INCOMPLETELY-CURED PLASTIC WAFERS

Elvin M. Bright, 17242 Bircher Street, Granada Hills, Calif.

Continuation-in-part of Ser. No. 686,170, Nov. 28, 1967, Pat. No. 3,609,114. This application Aug. 28, 1970, Ser. No. 67,898

Int. Cl. B29b 5/00

U.S. Cl. 156—500 **11 Claims**



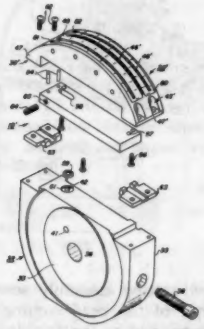
Apparatus for continuously forming delicately configured, partially polymerized decorative plastic wafers in condition for attachment and in situ curing on a supporting surface. Measured charges of flowable, plastic material are charged into preheated open-top molds where they assume a level top surface with the underface conforming to the mold configuration. After a period of travel the wafer is ejected when still incompletely polymerized but with its configured undersurface capable of lying on a planar surface without deformation. The succession of flexible, silicone rubber molds are secured to a flexible endless belt conveyor which moves them from a charging station to an ejection station in a period calculated to effect, say, 75 percent polymerization of the plastic. Each wafer is there ejected by arcing of the moving conveyor belt, as by abrupt direction-reversal over a guide roller. A slide plate then guides the emerging wafers onto a second conveyor without inversion, where their exposed top planar faces are roller-coated with adhesive and polymerization catalyst, then heated and conveyed to a bonding station for attachment to a supporting surface, such as a curved ceramic article.

3,718,525

LABEL TRANSFER WHEEL

John V. McGuire, Deerfield, and Donald W. Watson, Arlington Heights, both of Ill., assignors to Xerox Corporation, Stanford, Conn.

Filed Jan. 13, 1971, Ser. No. 106,083
Int. Cl. B65c *9/08, 9/14, 9/24*
U.S. Cl. 156—539 **3 Claims**



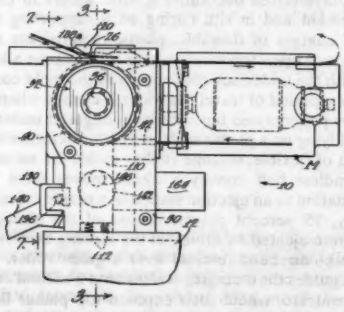
A transfer wheel with a radially extended land portion for transferring address-bearing labels or the address information therefrom onto articles being labeled. The transfer wheel land includes a series of thin slot-like vacuum holddown grooves extending along the periphery thereof in the plane of transfer wheel rotation. An individual vacuum admission port is provided for each holddown groove adjacent the leading end thereof, the ports being normally open to the atmosphere and serving to initially attract and attach the leading end of the labels thereto. The arrangement is such that direct communication of the supply ports with the atmosphere is first closed off by the label itself, thereby enhancing the vacuum pulldown effect within the holddown grooves to progressively cause the remainder of the label to be attached to the surface of the transfer wheel land in a sort of rolling action so that free spots or buckling of the label is avoided. As a further modification, in heat transfer applications, the surface of the land consists of a resistor type heating material alongside and between the vacuum holddown grooves to heat the label prior to transfer.

3,718,526

APPARATUS FOR FRICTION FUSING

James R. Annis, Jr., Rolling, Ill., assignor to Signode Corporation

Filed Feb. 25, 1971, Ser. No. 118,935
Int. Cl. B30b *5/00*; B65b *13/24*
U.S. Cl. 156—580 **24 Claims**



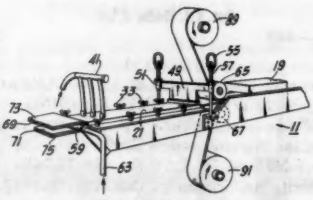
A strapping machine for feeding strap from a supply, tensioning a strap loop around an article, friction fusing overlapping end portions of the strap and cutting the loop of strap from the supply. The machine includes a strap engaging wheel, with an anvil and a feed pad supported adjacent the periphery of the wheel and biased towards the wheel to frictionally grip strap between the anvil and wheel or the feed pas and wheel. A unidirectional motor drives the feed wheel, and a drive mechanism between the motor and the wheel is capable of (1) rotating the wheel in one direction while the feed pad forces the strap into engagement with the periphery of the wheel, (2) rotating the wheel in a second direction while the anvil frictionally grips over-lapping portions of the strap to tension the strap loop about an article and (3) automatically converting rotation in the second direction to oscillating movement to friction fuse the overlapping strap portions.

3,718,527

APPARATUS FOR IMPREGNATING FIBER REINFORCEMENTS WITH HARDENABLE RESIN

James L. Goodman, Bristol, Tenn., assignor to Morrison Molded Fiber Glass Company, Bristol, Va.

Filed Sept. 3, 1968, Ser. No. 756,895
Int. Cl. B32b *31/08*; D04h *3/12*
U.S. Cl. 156—381 **9 Claims**



Apparatus for practicing the method of the invention includes a closed chamber into which partially impregnated material is introduced and wherein additional resin flows. A pressure plate at the exit end of the chamber compresses the resin impregnated material to spread the resin more completely throughout the material and to prevent excess resin from exuding from the chamber.

Additional dry filamentary material may be applied to the resin impregnated filamentary material prior to entering a resin curing zone.

3,718,528

HEAT REFLECTING LAMINATE

Axel Emil Bergstrom, Fregattvagen 7, Lidingo, Sweden

Continuation of Ser. No. 752,468, April 14, 1968, abandoned. This application Aug. 9, 1971, Ser. No. 170,337
Int. Cl. B44f *1/00*
U.S. Cl. 161—1 **5 Claims**

A radiation filter laminate material which transmits visible light and reflects heat radiation, comprising a plastic substrate on which is precipitated catalytically at least one coating of a metal or metals which impart to the material the properties of reflecting heat radiation to a greater degree than it reflects visible light, and which is also provided with a textile reinforcing material adhered to one or both sides thereof.

3,718,529

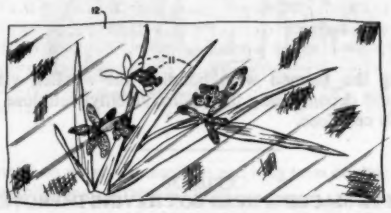
PICTURE AND METHOD OF MAKING SAME

Margot O. Coleman, 10100 SW. 56th Ave. 33156, and Elizabeth W. Johnson, 4780 Pine Drive 33143, both of Miami, Fla.

Filed May 24, 1971, Ser. No. 146,100
Int. Cl. A01n *3/00*; A41g *1/00*; B44f *7/00*
U.S. Cl. 161—19 **6 Claims**

Natural flowers, foliage and/or plants, fresh or dried are grouped in an attractive arrangement on a backing sheet of paper or the like in which the sheet should be

impervious to water and shrinkage and the material pressed as flat as possible against the sheet and glued thereto if desired, after which a sheet of silk tissue paper or the like is placed over the pressed material and painted over with a clear white water-diluted glue followed by



brushing all possible wrinkles, when dry a coat of decoupage is applied providing either a glossy or flat finish. Acrylic paints are then applied, simulating the color of the actual material as closely as possible; and finally, when dry, a final coating of acrylic gel is applied.

3,718,530

TREATMENT OF POLYPROPYLENE SURFACE TO PROMOTE ADHESIVE BONDING

Thomas F. Watson, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Sept. 16, 1970, Ser. No. 72,789
Claims priority, application Sweden, Aug. 18, 1967, 11626/67
Int. Cl. B32b *25/08*
U.S. Cl. 161—67 **2 Claims**

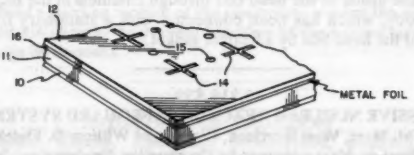
The adhesion of carboxylated SBR adhesive to polypropylene carpet backings is improved by a coating on the polypropylene of chlorinated polypropylene having a chlorine content of 10–20%.

3,718,531

MOUNTING BASE MATERIAL FOR RUBBER PRINTING PLATES AND METHOD OF MANUFACTURING THE SAME

Thomas W. Lewis, Charlotte, N.C., assignor to Rexham Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 793,008, Jan. 22, 1969, abandoned. This application Dec. 30, 1970, Ser. No. 102,870
Int. Cl. B32b *3/30;* **B41f** *27/06, 27/08*
U.S. Cl. 161—116 **4 Claims**



A non-internally delaminable mounting material having an outer surface which includes a visibly and tactually discernible alignment grid and a method of manufacturing the same are disclosed herein. The laminate material includes outer layers of polyethylene terephthalate or polyvinyl fluoride film and inner layers of a resilient cellulosic material and includes a layer of metal foil between the outer film layer and the cellulosic material.

3,718,532

MICROPOROUS SHEETS AND PROCESSES

Stanley I. Hayes, Jr., Hamilton, Mass., assignor to USM Corporation, Flemington, N.J.

Filed April 8, 1970, Ser. No. 26,591
Int. Cl. B32b *3/26, 5/14, 5/18*
U.S. Cl. 161—159 **4 Claims**

Microporous sheet having pores of controlled size and arrangement and process of making in which temperature and composition are coordinated to control growth of size of nonsolvent liquid droplets constituting the discontinuous phase of an emulsion of which the continuous phase is a heated liquid polymeric reactive material which sets through reaction to solid condition and in which process the droplets are removed after setting of the reactive material to leave spaces constituting openings or pores in the solidified material. Pores of smaller size relative to the size of pores in the body of the sheet are provided in the sheet by control of the temperature of a casting surface.

3,718,533

COMPOSITE SHEETS FOR AGRICULTURAL USE

Shigeru Shibata, 213 Kamikuze-cho Kuze, Minami-ku, Kyoto, Japan

Filed Dec. 16, 1970, Ser. No. 98,769
Claims priority, application Japan, May 6, 1970, 45/44,663; Oct. 31, 1970, 45/95,555
Int. Cl. B32b *15/08*
U.S. Cl. 161—165 **4 Claims**

A composite sheet for agricultural use comprises a base layer of polyvinylchloride, a polyester film, an aluminum film vapor deposited on the polyester film to a thickness of 80 to 400 A., a protective layer made of a material selected from the group consisting of polyamide and an epoxide resin and applied on the surface of the aluminum film, and a bonding agent cementing the surface of the protective layer to the base layer. The composite sheet transmits approximately 55% of visible rays, but only approximatelyl 30% of infrared rays and approximately 12 to 30% of ultraviolet rays.

3,718,534

SPONTANEOUSLY CRIMPING SYNTHETIC COMPOSITE FILAMENT AND PROCESS OF MANUFACTURING THE SAME

Miyoshi Okamoto, Osaka, and Koji Watanabe, Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 26, 1970, Ser. No. 22,803
Claims priority, application Japan, Mar. 26, 1969, 44/22,381
Int. Cl. B29f *3/10;* **D02g** *3/00*
U.S. Cl. 161—173 **16 Claims**

A spontaneously crimping synthetic composite filament having silk-like hand feel and sheen comprises at least two synthetic polymeric filamentary constituents which are different from each other and eccentrically incorporated into a filament body and has a fineness not exceeding 2.0 denier. The composite filament is manufactured using a process comprising (1) preparing a plurality of

composite streams each of which is composed of at least two polymeric constituent streams eccentrically incorporated, (2) uniting the composite streams with a polymeric stream into a complex conjugate stream in which the uniting stream fills up spaces between the composite streams, (3) spinning the complex conjugate stream into a filament form, and (4) removing the uniting constituent in order to obtain the composite filaments. The invention includes a complex conjugate filament intermediately obtained in the above-stated process. The complex conjugate filament is composed of a plurality of composite filamentary segments and a uniting constituent which is removable.

3,718,535

PREFORMED SELF-SUPPORTING, FLEXIBLE AND COHERENT ELECTRICALLY HEATABLE LAMINAR STRUCTURE AND METHOD OF MANUFACTURE THEREOF

Ramsey C. Armstrong, Pacific Palisades, and Herbert Hoover, III, San Marino, both of Calif., assignors to The Sierracin Corporation, Sylmar, Calif.

Continuation-in-part of Ser. No. 634,296, April 27, 1967, abandoned, which is a continuation-in-part of Ser. No. 575,072, Aug. 25, 1966, abandoned. This application March 26, 1970, Ser. No. 22,878

Int. Cl. B60l *1/02*; B32b *15/08*

U.S. Cl. 161—165 **22 Claims**

Flexible sublaminates suitable for lamination between rigid transparent dielectric plies to form electrically powerable transparent safety glass-type constructions are prepared by first disposing on at least one surface of a carrier film a thin, adherent electrically conductive metallic coating and subsequently laminating to the metal-coated surface an interlayer film to form a flexible coherent laminar structure transparent when its exterior surfaces are smooth. Carrier films employed have an ultimate elongation of less than about 150 percent and tensile strength greater than about 5000 psi; interlayer films have ultimate elongation greater than about 150 percent and tensile strength less than about 6500 psi. Exemplary conductive metals are gold, silver, chromium, copper, and Inconel.

3,718,536

COMPOSITE BOARD AND METHOD OF MANUFACTURE

Martin L. Downs, Appleton, and Milton G. Schmitt, Kaukauna, both of Wis., assignors to Thilmany Pulp & Paper Company, Kaukauna, Wis.

Filed April 22, 1970, Ser. No. 31,023

Int. Cl. B32b *5/16*, *19/02*, *29/00*, *31/20*

U.S. Cl. 161—168 **11 Claims**

A composite board formed from a mass of shredded paper containing thermoplastic material.

3,718,537

NONWOVEN FIBROUS PRODUCT AND METHOD FOR PRODUCING SAME

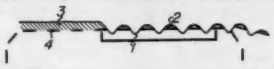
Atsushi Kawai, Takehiro Katsuyama, Migaku Suzuki, and Hidenori Ohta, Ohtake, Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Filed Sept. 8, 1970, Ser. No. 70,421

Int. Cl. D21h *5/12*

U.S. Cl. 162—157 C **14 Claims**

A nonwoven fibrous product having excellent hand is produced without using adhesives by dispersing in an aqueous medium viscose fibers comprising hydroxymethyl cellulose xanthate, forming the dispersed fibers into a web,



swelling the formed web, bonding the swollen viscose fibers and decomposing the hydroxymethyl cellulose xanthate to cellulose.

3,718,538

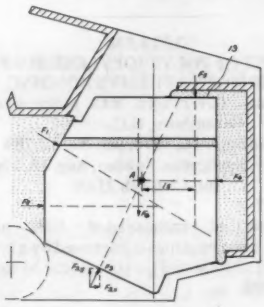
PAPER MACHINE HEAD BOX HAVING IMPROVED BALANCE

Taisto Ensio Makela, Karhula, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed April 9, 1971, Ser. No. 132,786

Int. Cl. D21f *1/02*

U.S. Cl. 162—340 **4 Claims**



The head box is fitted with a stationary lower lip and a movable hollow body forming an upper lip. The lower end of the body has been attached to a stationary supporting beam of the head box with a flexible gasket so that a cavity is formed between the supporting beam and a front wall of the body. The cavity forms a closed space, which is limited by the side plates of the head box, the supporting beam, and another flexible gasket between the beam and the upper edge of the movable body, and flexible side gaskets between the side plates and the body. The closed space thus formed is communicating with the inside of the head box through channels in the movable body, which has been connected with a stationary front wall of the head box by a flexible gasket.

3,718,539

PASSIVE NUCLEAR REACTOR SAFEGUARD SYSTEM

John M. West, West Hartford, Conn., and William D. Fletcher, Arlington, Va., assignors to Combustion Engineering, Inc., Windor, Conn.

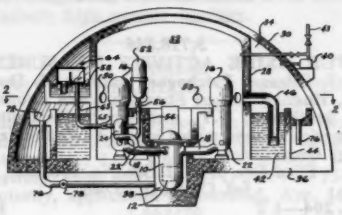
Continuation-in-part of Ser. No. 730,719, May 21, 1968, abandoned. This application March 31, 1971, Ser. No. 129,724

Int. Cl. G21c *15/18*

U.S. Cl. 176—37 **8 Claims**

A safeguard system for a nuclear power plant is disclosed that incorporates means for containing the effects of a reactor accident to protect the environs of the plant against the release of harmful contaminants. The system includes particular containment structure housing the plant and a vapor sup-

pression pool for condensing vaporous elements released from the plant. Various core cooling apparatus are integrated into



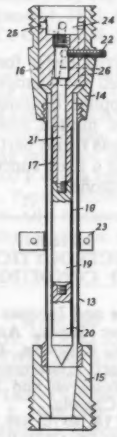
the system to provide immediate and long term cooling of the reactor following a serious accident.

3,718,540

ELECTROLYTIC CELLS

Henry Philip Bailey, Fossway, England, assignor to International Research & Development Company Limited, Newcastle upon Tyne, England

Filed March 19, 1970, Ser. No. 126,057
Int. Cl. C22d *1/02*
U.S. Cl. 204—272 **14 Claims**



An electrolysis cell for purification of water containing dissolved chlorides by generation of chlorine or hypochlorite consists of coaxial tubular anode and cathode defining an annular flow passage for the continuous flow of the electrolyte and the inlet passages to the annular passage are arranged to produce a swirling motion of the electrolyte around the axis of the anode in order to prevent blocking of the narrow annular passage by deposits.

3,718,541

ISOLATION OF PROTEINS

Vladimir Kalina, Lausanne, Switzerland, assignor to Societe d'Assistance Technique Pour Produits Nestle S.A., Lausanne, Switzerland

No Drawing. Filed July 16, 1970, Ser. No. 62,766
Claims priority, application Great Britain, Aug. 28, 1969, 42,795/69
Int. Cl. C12b *1/00*
U.S. Cl. 195—28 R **8 Claims**

A protein isolate is obtained from bacterial cells by subjecting the cells to an alkaline shock of short duration which is followed by degradation with an acid. Other features of the invention are disclosed in the specification.

3,718,542

INVERTED STEPS FOR THE PREPARATION OF 9α-FLUORO-16-METHYLENE-PREDNISOLONE OR-PREDNISONE AND 21-ESTERS THEREOF

Klaus Irmscher; Fritz Von Werder; Karl-Heinz Bork, and Hans-Gunther Kraft, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed Aug. 20, 1969, Ser. No. 851,723
Int. Cl. C07c *169/32*
U.S. Cl. 195—51 E **7 Claims**

A process having improved yields is provided for the production of 9α-fluoro-16-methylene-prednisone or prednisolone and 21-esters thereof, the key to the process being the order of steps as follows:

a. microbiologically dehydrogenating 9β,11β-oxido-16-methylene-4-pregnene-17α-ol-3,20-dione in the 1(2) position;

b. reacting the resultant 9β,11βoxido-16-methylene-1,4-pregnadiene-17α-0l-3,20-dione with hydrogen fluoride; and

c. reacting the resultant 9α-fluoro-16-methylene-1,4-pregnadiene-11β,17α-diol-3,20-dione with iodine in an alkaline solution, and thereafter with an alkali metal acetate to form 9α-fluoro-16-methylene-prednisolone-21-acetate.

3,718,543

BACTERIORIA TEST MATERIAL

John A. Lagomarsino, Wantagh, N.Y., assignor to Bio-Derivatives Corporation, Deer Park, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,695
Int. Cl. C12k *1/10*
U.S. Cl. 195—99 **20 Claims**

An improved bacteriuria test material is made up of an admixture of sulfanilamide and N-(1-Naphthyl) ethylenediamine dihydrochloride. In one embodiment a solution of these materials is employed to impregnate a paper strip or a cotton swab and then permitted to dry. In use when the resulting test material, such as the aforementioned impregnnated paper or cotton swab, is brought into contact or wetted with a test specimen containing nitrite, indicating the presence of bacteria in the urine or the test specimen, the paper or swab undergoes a fairly rapid color change to a rose or red color.

3,718,544

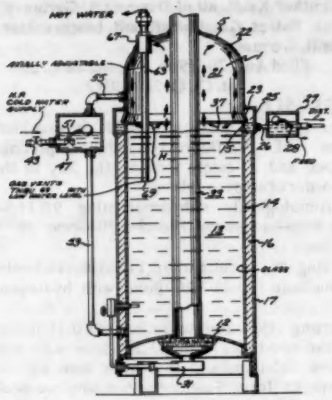
WATER HEATING AND PURIFICATION SYSTEM

Anker V. Sims, Redondo Beach, Calif., assignor to Pollution Research & Control Corp., Glendale, Calif.

Filed Feb. 2, 1970, Ser. No. 7,852
Int. Cl. B01d *3/00*; F28b ; B01d *3/14*
U.S. Cl. 202—190 **5 Claims**

Apparatus for producing distilled water and undistilled hot water including a hot water tank with an insulated lower portion and an uninsulated upper portion, condensation occurring on the walls forming the upper portion and resultant condensate being collected in a distillate trough positioned below the walls of the upper portion. A withdrawal tube adjustable in height extends below the water surface and means are provided in the inlet line to throttle the flow of incoming water to correspond closely to the flow from the hot water system under maximum demand conditions. A separate vaporizing

vessel can be used in combination with a conventional hot water heater, the operation thereof requiring recirculation of



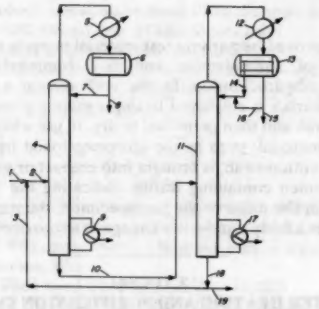
water from the vessel to the hot water heater at periodic intervals.

3,718,545

DISTILLATION PROCESS FOR RECOVERING SUBSTANTIALLY ANHYDROUS FORMIC ACID FROM AQUEOUS SOLUTIONS

Theodore Horlenko, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed April 26, 1971, Ser. No. 138,569
Int. Cl. B01d *3/36*; C07c *53/02*
U.S. Cl. 203—15 14 Claims



Substantially anhydrous formic acid is recovered from aqueous solution by azeotropically distilling the solution with a non-aromatic hydrocarbon entrainer which boils between about 60° and 120° C. Paraffinic and alicyclic hydrocarbons boiling between about 80° C and about 115° C are particularly suitable entrainers. The residue of the azeotropic distillation, containing formic acid and water is a formic acid:water ratio at least as great as that obtaining in any ternary azeotrope of formic acid, water, and the entrainer, can then be topped to separate water as a distillate from the formic acid, the residue from the topping distillation then being recycled to the azeotropic distillation. The process can be employed with feedstocks containing acetic acid in addition to formic acid and water.

ERRATUM

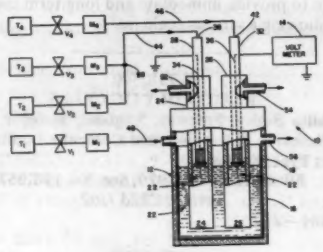
For Class 204—272 see:
Patent No. 3,718,540

3,718,546

SULFUR OXIDE ACTIVITY MEASUREMENT

Francis J. Salzano, Patchogue, Andrew M. Davis, Blue Point, Hugh S. Isaacs, Shoreham, and Leonard Newman, Smithtown, N.Y., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 9, 1971, Ser. No. 206,352
Int. Cl. G01n *27/46*
U.S. Cl. 204—1 T 10 Claims



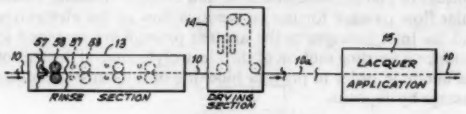
A sulfur oxide activity meter for measuring directly in an electrochemical cell the changes in SO_2 activity in a sample gas being supplied continuously to the cell. The electrolyte consists of molten fused Li_2SO_4, K_2SO_4 and Na_2SO_4. The sample gas forms part of one electrode while a reference gas having a fixed concentration of SO_2 forms part of the other electrode.

3,718,547

CONTINUOUS ELECTROLYTIC TREATMENT FOR CLEANING AND CONDITIONING ALUMINUM SURFACES

William Ernest Cooke and Jacques Francois Cote, Kingston, Robert Arthur Innes, Amherstview, and Roy Cowieson Spooner, Kingston, Ontario, Canada, and Walter Maria Eduard Kellermann, Oswego, N.Y., assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed Nov. 16, 1970, Ser. No. 89,862
Int. Cl. C23b *9/00*
U.S. Cl. 204—28 15 Claims



High speed continuous treatment of aluminum, e.g. aluminum strip, is obtained for cleaning the surface and conditioning it for subsequent application of lacquer or other organic coating, by electrolytic treatment in hot acidic electrolyte maintained in turbulence at the surface of the travelling sheet, employing current at levels that preferably involve a very low total coulombic charge, for example in a range up to 3 coulombs per square inch. Special advantage in lacquer pretreatment and the like is realized with electrode sequence such that the strip is cathodic both before and after anodic action, and additionally improved efficiency is achieved with a substantially larger anodic area than the total area of cathodic

polarity. Efficient cleaning at high speeds is obtainable in the lower portion of the above range of coulombic charge, advantageously with electrode areas reduced to afford relatively high current densities.

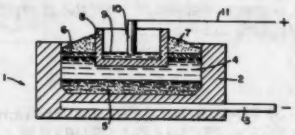
3,718,548
PROCESS FOR THE COLORING OF ANODIZED LAYERS ON ALUMINUM
Jean-Francois Paulet, Siblingen, and Fritz Endtinger, Neuhausen am Rheinfall, Switzerland, assignors to Swiss Aluminium Ltd., Chipps, Switzerland
No Drawing. Filed Apr. 13, 1971, Ser. No. 133,749
Claims priority, application Switzerland, Apr. 16, 1970, 5,662/70
Int. Cl. C23b *9/02*
U.S. Cl. 204—35 N 6 Claims

The invention relates to a process for coloring oxide layers on aluminum. This consists in using meltable organic coloring matters in undissolved state, which are brought into contact with the oxide layer and molten into the pores of the oxide layer by heating.

3,718,549
ALKALINE NICKEL PLATING SOLUTIONS
Arthur H. Du Rose, Richmond Heights, and Robert L. Stern, Cleveland Heights, both of Ohio, assignors to Kewanee Oil Company, Bryn Mawr, Pa.
Continuation of Ser. No. 752,169, Aug. 13, 1968, abandoned. This application June 14, 1971, Ser. No. 153,068
Int. Cl. C23b *5/08, 5/46*
U.S. Cl. 204—49 1 Claim

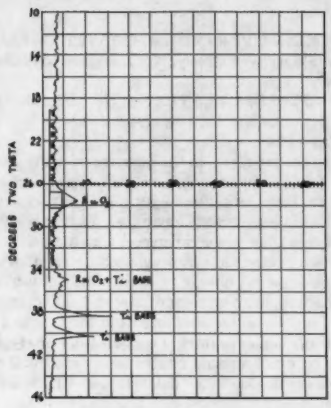
An alkaline nickel electroplating bath and process wherein brighter and more ductile nickel electroplate is formed due to the inclusion of addition agents which include certain organic amines, nitriles, unsaturated organic acids and heterocyclic compounds. Such plating processes are operable from room temperature to about 180°F over a current density range of 5 to 100 amps per sq. ft. Typical addition agents include 1,6-Morpholino-2-hexyne; N-Allyl benzene sulfonamide; Sodium phosphite; Carboxymethylpyridinium iodide and 2-Phenyl-2-Cyanoethoxybutyne.

3,718,550
PROCESS FOR THE ELECTROLYTIC PRODUCTION OF ALUMINUM
Hans-Jurgen Klein, Sierre, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland
Filed Dec. 2, 1970, Ser. No. 94,581
Claims priority, application Switzerland, Dec. 5, 1969, 17,975/69
Int. Cl. C22d *3/12*; B01k *3/06*
U.S. Cl. 204—67 5 Claims



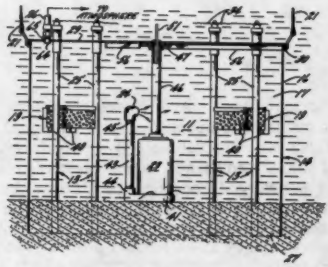
Process for the electrolytic production of aluminum from a fused alumina-containing bath of alkali aluminum fluoride in which the part of the anode in contact with the bath consists of an oxidic electron-conducting ceramic material chemically resistant to the fluoride bath. Preferably the ceramic material consists predominantly of SnO_2.

3,718,551
RUTHENIUM COATED TITANIUM ELECTRODE
Aleksandrs Martinsons, Wadsworth, Ohio, assignor to PPG Industries, Inc., Pittsburg, Pa.
Continuation-in-part of Ser. No. 767,281, Oct. 14, 1968, Pat. No. 3,562,008. This application Nov. 2, 1970, Ser. No. 86,033
Int. Cl. B01r *3/04, 1/00*
U.S. Cl. 204—98 2 Claims



An anode for the electrolysis of brines is disclosed. The anode has a titanium base member and an electroconductive coating thereon. The electroconductive coating comprises a mixture of amorphous titanium dioxide and a member of the group consisting of ruthenium and ruthenium oxide.

3,718,552
METHOD AND APPARATUS FOR ELECTROLYTICALLY RECOVERING METALS
Charles H. Mortell, 6929 South Main Street, Rockford, Ill.
Filed Dec. 21, 1970, Ser. No. 99,784
Int. Cl. C22d *1/00, 1/02*; C23b *5/68*
U.S. Cl. 204—105 R 9 Claims



A depositer for electrolytically recovering metal from the bed of a body of water includes a submersible housing with a closed top end and an open bottom end and is operable to lodge by walls defining the sides of the housing within the bed to form a closed chamber containing a portion of the bed and water. The housing serves as the anode of the depositor and is electrically connected with an energy source for supplying direct current thereto. A plurality of rods depending from the top end extend into the chamber, serve as the cathodes, and are also connected with the energy source. Mounted on the in-

side wall of the chamber are a plurality of sieves adapted to hold a dissolvable chemical used to increase the conductivity of water captured in the chamber. A pump agitator suspended from the top and positioned within the chamber draws material from the bed and circulates it within the chamber to thoroughly mix the chemical with the captured water and bed to more readily ionize the metal to be recovered. As a suitable electric potential is applied between the anode and cathodes, the ionized metal confined within the chamber deposits upon the cathode rods.

3,718,553

CRACKING OVER CONTAMINATED CATALYST

William A. Stover, Woodbury, N.J., assignor to Mobil Oil Corporation

Filed Dec. 28, 1970, Ser. No. 102,128
Int. Cl. C10g *11/02, 11/04*
U.S. Cl. 208—120 **12 Claims**

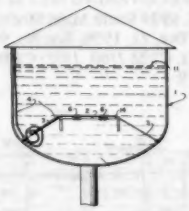
A process for cracking, in the absence of hydrogen, a gas oil charge, which comprises contacting said gas oil charge under catalytic cracking conditions with a catalyst, consisting of a crystalline aluminosilicate, having an exchangeable sodium content of less than 4 weight percent, contained in a porous matrix, which catalyst has impregnated thereon, prior to contact with said gas oil charge, a controlled amount of nickel, iron or vanadium in an amount of 100 to 1,000 ppm. of at least one of said metals and recovering from the cracked products, a gasoline of higher octane number than that capable of realization by cracking said charge under identical conditions with an otherwise identical catalyst, but which had not undergone initial impregnation with at least one of said metals.

3,718,554

CATHODIC PROTECTION FOR WATER TANKS

Lloyd K. Jacobs, 430 Allen Drive, Vine Grove, Ky. 40175, and Richard N. Hull, Rte. 1, P.O. Box 145, Irvington, Ky. 40146

Filed Sept. 18, 1969, Ser. No. 858,989
Int. Cl. C23f *13/00*
U.S. Cl. 204—147 **4 Claims**



The present invention discloses a support system for cathodic protection apparatus used in liquid containing metal tanks wherein submerged anodes are attached to buoyant submerged means, which means is maintained in a totally submerged condition by flexible attachment to the walls of the water tank, thereby preventing ice accumulation on and damage to the anodes.

3,718,555

ELECTROCHEMICAL MACHINING ELECTROLYTE

Jacob B. Darling, Carmel, Ind., and Mitchell LaBoda, Detroit, Mich., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 750,772, Aug. 7, 1968. This application Feb. 22, 1971, Ser. No. 117,693
Int. Cl. B23p *1/00*
U.S. Cl. 204—129.75 **2 Claims**

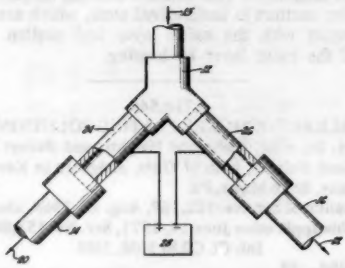
Hygroscopic additives for sodium and potassium chlorate and perchlorate electrochemical machining electrolytes. These additives have a fire retardant effect on combustibles exposed to electrolyte splash. When used in conjunction with relative humidities of above about 35 percent, the additives prevent the electrolyte splash from drying sufficiently to support combustion. Specific materials which are compatible with the electrolyte are disclosed.

3,718,556

IONIC pH CONTROL

Gilson H. Rohrback, Whittier, Calif., assignor to Magna Corporation, Santa Fe Springs, Calif.

Filed July 22, 1970, Ser. No. 57,088
Int. Cl. B01k *3/00*; C02c *5/12*
U.S. Cl. 204—149 **12 Claims**



An aqueous system is made either more basic or more acidic by feeding a liquid containing a preponderance of pH changing hydroxyl or hydrogen ions. The pH changing ions are produced at the electrodes of an electrolyzing system. Liquid flowing past one of the electrodes is returned to the aqueous system of which the pH is to be controlled and liquid flowing past the other electrode is discharged. The amount of pH change is controllable, either open-loop or closed-loop. Control may be achieved by several methods including varying the voltage applied to the electrodes and varying the flow rate past one or both of the electrodes.

3,718,557

PROCESS OF MAKING ClF_3O

Howard H. Rogers, Woodland Hills, and Donald Pilipovich, Canoga Park, both of Calif., assignors to North American Rockwell Corporation

Filed Dec. 6, 1967, Ser. No. 688,628
Int. Cl. B01j *1/00*
U.S. Cl. 204—157.1 **4 Claims**

Production of ClF_3O by reacting under ultraviolet light a compound selected from the group consisting of ClF_3F and ClO_3F with a compound selected from the group consisting of ClF_5, ClF_3, ClF, OF_2 and F_2.

3,718,558

PROCESS FOR PRODUCING A CROSS-LINKED COPOLYMER OF TETRAFLUOROETHYLENE AND PROPYLENE USING HIGH ENERGY IONIZING RADIATION

Yoneho Tabata, Matsudo, and Gen Kojima, Tokyo, both of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Dec. 11, 1970, Ser. No. 97,387
Claims priority, application Japan, Dec. 11, 1969, 44/99615
Int. Cl. C08d *1/00*; C08f *1/16*
U.S. Cl. 204—159.2 **6 Claims**

A cross-linked copolymer of tetrafluoroethylene and propylene is produced by irradiating a copolymer of tetrafluoroethylene and propylene in the absence of

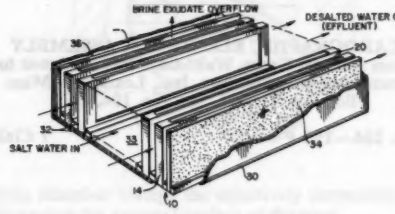
monomers of tetrafluoroethylene, propylene, or other copolymerizable monomer, with high energy ionizing radiation.

3,718,559

ELECTROGEL PROCESS FOR REMOVING ELECTROLYTES AND CONCENTRATING THE SAME FROM AN AQUEOUS SOLUTION

Richard A. Wallace, 9707 Fourth Avenue, Brooklyn, N.Y.

Filed March 27, 1970, Ser. No. 23,311
Int. Cl. B01d *13/02*; B01k *5/00*; C02b *1/82*
U.S. Cl. 204—180 G **28 Claims**



An electrolytic continuous method for simultaneously removing electrolytes from aqueous solution and concentrating the electrolytes produced therefrom which comprises subjecting an aqueous electrolyte solution to contact with an inorganic oxide gel under the influence of an electrical field, allowing the electrolyte to be sorbed by the gel until a point of saturation is achieved, whereby the electrolyte is exuded from said gel and then recovering the resultant electrolyte exudate from said gel. Conveniently, the apparatus comprises at least one electrolyte concentrating unit comprising an inorganic oxide gel core encased within an open module having a bottom wall and a pair of parallel opposing sides and opposing end walls and whose opposing sides further comprise a cation-permeable membrane and an anion-permeable membrane, respectively, and a source of an applied electrical field.

3,718,560

PROCESS FOR ELECTRODIALYSIS OF SUGAR SOLUTIONS

Michiyuki Sugiyama, Yoshikuni Takatori, Ryosuke Touyama, Akira Nakamura, Teiji Yamauchi, and Masaaki Kato, Yokohama, and Yushio Nakashiba, Tokyo, Japan, assignors to Taito Co., Ltd., and Asahi Kasei Kogyo Kabushiki Kaisha

Continuation-in-part of application Ser. No. 201,317, Nov. 23, 1971, which is a continuation-in-part of application Ser. No. 52,335, July 6, 1970. This application May 30, 1972, Ser. No. 257,852
Int. Cl. B01d *13/02*; B01k *5/00*
U.S. Cl. 204—180 P **48 Claims**

A desalination process for the removal of salts from sugar solutions by electrodialysis in a cell having ion-permeable membranes alternatively disposed between the electrodes by contacting the sugar solution with the alternately disposed ion-permeable membranes comprising having as an anion exchange membrane an ion-permeable membrane with an ion exchange capacity of less than about 0.3 milliequivalent/gram of dry membrane and having as the cation exchange membrane an ion-permeable membrane having cation permselectivity. The desalination process can be advantageously used in sugar refining with additional sugar refining techniques, such as adsorption or carbonation.

3,718,561

POROMERIC POLYMERIC PRODUCTS AND PROCESS THEREFOR

Ezekiel J. Jacob, 25 Monroe Place, Brooklyn, N.Y.

Continuation of Ser. No. 691,121, Dec. 14, 1967, abandoned. This application July 7, 1970, Ser. No. 56,150
Int. Cl. B01d *13/02*; B01k *5/00*
U.S. Cl. 204—180 R **3 Claims**

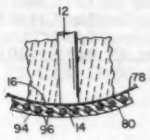
The present invention shows how to make poromeric polymeric products by leaching out water-soluble electrolytes from a polymeric material with the help of galvanic or electrolytic current.

3,718,562

ELECTRODE ASSEMBLY

Ihsan A. Haddad, Bedford, Mass., assignor to Instrumentation Laboratory, Inc., Lexington, Mass.

Filed May 18, 1970, Ser. No. 38,202
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 P **14 Claims**



An electrode assembly includes an elongated tubular support member to which is secured a coupling structure. An electrode structure is supported by the coupling structure and has a sensing surface that projects externally of the coupling structure. A housing structure has a selectively permeable membrane secured over an opening at one end so that a chamber is defined for receiving an electrolyte solution. The housing is connected to the coupling structure so that the exposed sensing surface of the electrode structure is disposed in the electrolyte structure with its sensing surface in contact and distorting the membrane structure. The housing and coupling structures have cooperating engaged locating surfaces that define the amount of permitted distortion of the membrane structure.

3,718,563

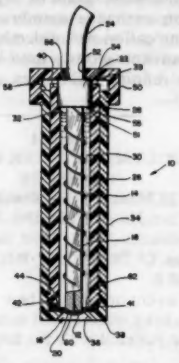
POLAROGRAPHIC SENSOR AND MEMBRANE THEREFOR

Irwin H. Krull, Garden Grove, and Donald N. Martin, Whittier, both of Calif., assignors to Beckman Instruments, Inc.

Filed Feb. 22, 1971, Ser. No. 117,633
Int. Cl. G01n *27/30, 27/40*
U.S. Cl. 204—195 P **9 Claims**

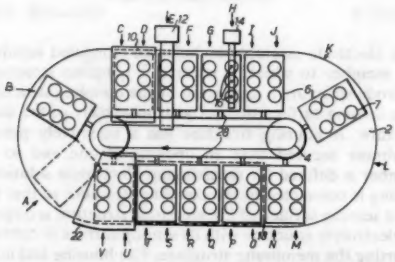
A polarographic sensor comprising a pair of electrodes joined by an electrolyte with a multi-layer gas permeable-essentially ion impermeable membrane separating the electrodes and electrolyte from the sample medium. The layers of the membrane are held together so as to prevent migration of electrolyte therebetween to the region overlying the sensing electrode and to prevent the trapping of gas or liquid between the layers in such region. The outer layer of the membrane is preferably formed of silicone rubber while the next layer is

formed of a material which is less permeable to gas and water vapor than the outer membrane, for example Teflon. A



polarographic sensor employing such a membrane exhibits good time response and minimal flow sensitivity.

3,718,564
ELECTROPHORETIC CASTING OF POTTERY
John Alfred Charles Ebrey, Stoke-on-Trent, and George Terah Gough, Newcastle, England, assignors to Gough and Company (Hanley) Limited, Stoke-on-Trent, Staffordshire, England
Filed July 15, 1971, Ser. No. 162,948
Claims priority, application Great Britain, Mar. 3, 1971, 5,895/71
Int. Cl. B01k *5/00, 5/02*
U.S. Cl. 204—181 **10 Claims**

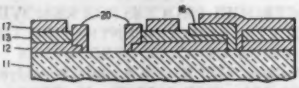


In the casting of ceramic articles from slip in porous moulds, casting up is aided by electrophoresis, the electrophoretic treatment being commenced after a short initial cast up and ceasing before a final cast up which has a much longer duration than the electrophoretic treatment.

Apparatus for carrying out the process is also described.

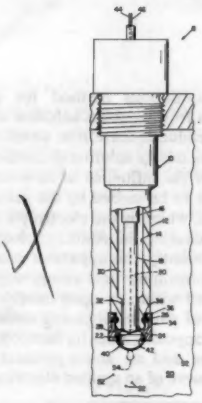
3,718,565
TECHNIQUE FOR THE FABRICATION OF DISCRETE RC STRUCTURE
Frank Palmer Pelletier, Wescosville, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 27, 1970, Ser. No. 93,242
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **1 Claim**

A technique for the fabrication of tantalum-based resistors and capacitors on a single substrate member involves a series of process steps wherein a layer of tantalum nitride and a layer of beta-tantalum are sequentially deposited upon a substrate member and serve as the resistor



and capacitor films respectively of the desired structure, the capacitor film being converted to a protective anodic oxide during the course of the processing.

3,718,566
POLAROGRAPHIC ELECTRODE ASSEMBLY
William Michael Krebs, Waltham, Mass., assignor to Instrumentation Laboratory, Inc., Lexington, Mass.
Filed Jan. 7, 1971, Ser. No. 104,665
Int. Cl. G01n *27/30*
U.S. Cl. 204—195 P **7 Claims**

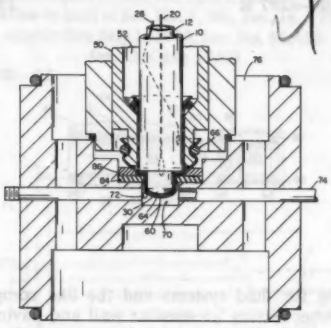


An electrochemical electrode assembly includes a housing defining an electrolyte chamber. The housing has an aperture in a wall and a selectively permeable membrane is disposed across the aperture. An electrode is supported within the chamber in close proximity to the membrane and a filter is supported on the housing and interposed between the membrane and test material in spaced relation to the membrane to intercept liquid particles while freely passing gas from the medium.

3,718,567
ELECTRODE ASSEMBLY
Ihsan A. Haddad, Brighton, and Thomas A. Rosse, Lexington, Mass., assignors to Instrumentation Laboratory, Inc., Lexington, Mass.
Filed Apr. 7, 1970, Ser. No. 27,194
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 P **7 Claims**

Electrochemical apparatus includes an electrode assembly having an electrolyte chamber with a projecting stem portion. A pH sensitive membrane is secured across the end of the projecting stem portion and a selectively permeable membrane is secured over the pH sensitive membrane. The electrode assembly is disposed in an analysis

chamber so that the pH sensitive membrane is entirely within the analysis chamber. A clamp at the port of the



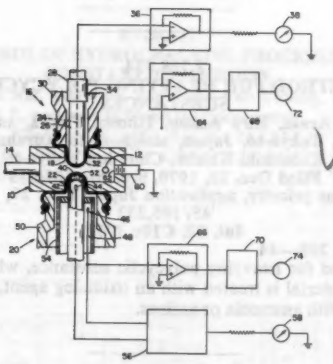
analysis chamber clamps the selectively permeable membrane against the external surface of the stem.

3,718,568

ELECTROCHEMICAL SENSOR INSTRUMENTATION

Robert T. Neuwelt, Arlington, Mass., assignor to Instrumentation Laboratory, Inc., Lexington, Mass.

Filed May 21, 1971, Ser. No. 145,839
Int. Cl. G01n *27/30, 27/40*
U.S. Cl. 204—195 P **17 Claims**



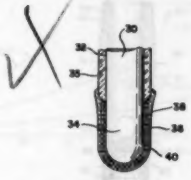
Apparatus for monitoring the integrity of a selectively permeable membrane in an electrochemical sensor system that includes two half cells, a monitoring electrode having a surface disposed in the sample chamber, and a monitoring circuit connected to a half cell on the opposite side of the selectively permeable membrane from the monitoring electrode for sensing current flow resulting from the difference in electric potential at the monitoring electrode and the galvanic potential genereated by the connected half cell for providing an output signal to indicate the integrity of the selectively permeable membrane.

3,718,569

METHOD OF MAKING SOLID STATE GLASS ELECTRODE

Arne J. Petersen, Balboa, and George Matsuyama, Fullerton, both of Calif., assignors to Beckman Instruments, Inc.

Division of Ser. No. 866,249, Oct. 14, 1969, Pat. No. 3,649,506. This application Nov. 29, 1971, Ser. No. 203,091
Int. Cl. G01n *27/36;* **C03c** *27/04*
U.S. Cl. 204—195 G **8 Claims**



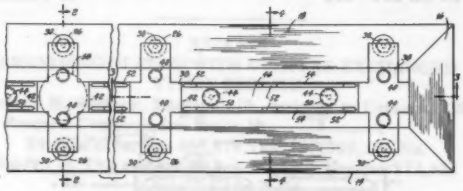
A solid state glass electrode in which a conductor having a surface layer of an electrochemically active metal is coated with a first coating of a mixture of a glass and a halide of the active metal and a second outer coating of ion sensitive glass. The preferred active metal and halide are copper and cuprous chloride, respectively. The electrode is rugged, has a response approximating that of a standard glass electrode and has better stability over long periods and changing temperature conditions than previous solid state glass electrodes.

3,718,570

CATHODIC PROTECTION ANODE WITH SECTIONS REPLACEABLE UNDERWATER

Isidore Geld, Flushing, N.Y., assignor to the United States of America as represented by the Secretary of the Navy

Filed June 1, 1970, Ser. No. 42,169
Int. Cl. C23f *13/00*
U.S. Cl. 204—196 **1 Claim**



An impressed current anode assembly for cathodic protection that includes several anode sections clamped to a bus conductor in the assembly. Each anode section is separable from the anode assembly and replaceable by a scuba diver equipped with simple hand tools.

3,718,571

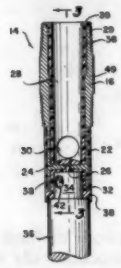
ANODE FITTING

Arthur W. Bidwell, Middletown, Ohio, assignor to Magnode Products, Inc., Trenton, Ohio

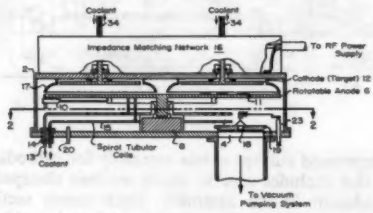
Filed June 30, 1971, Ser. No. 158,431
Int. Cl. C23f *13/00*
U.S. Cl. 204—197 **9 Claims**

An anode fitting for protecting metallic surfaces such as water heaters, water tanks, and the like which are in contact with an electrolyte, from corrosion, the fitting including a connector member adapted to be secured to the metallic surface in electrical contact therewith and having a fluid passageway therethrough, the connector member including a hollow nipple portion having a depending tubular portion. The tubular portion includes an annular flange portion therein which is positioned so as

to form a socket at the distal end of the tubular portion, the socket being adapted to receive an electrode formed of a metal which is higher in the electromotive series than the metal forming the metallic surface. The electrode includes a core wire secured in electrical contact to the annular flange portion and a coating of insulating material lines the fluid passageway, and covers the outside of the tubular portion and substantially fills the space between the electrode and the socket.

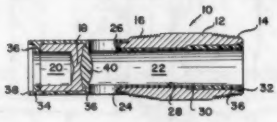


3,718,572
SPUTTERING SYSTEM WITH SPIRALLY COILED COOLANT COIL
Billie J. Robison, Palo Alto, and Richard A. D. Lucic, Sunnyvale, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Oct. 7, 1971, Ser. No. 187,264
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **10 Claims**



The anode and the workpieces of a thin film sputtering system are cooled by coolant that circulates through spiral tubular coils located below the anode and into chambers located within the anode. The anode is rotatable, and the cooling coils expand and contract to permit partial rotation of the anode. The two cathodes of the sputtering system are cooled by coolant that circulates through chambers within the cathodes. The cathodes are designed to minimize contamination from residue coolant leaking into the gastight enclosure of the sputtering system while the cathodes are being removed. The gastight enclosure is connected to a vacuum pump through a port. A throttle plate, located within the enclosure over the port, aids the vacuum pump to efficiently regulate the gas pressure in the enclosure during a sputtering run.

3,718,573
FLUID FITTING
Arthur W. Bidwell, Middletown, Ohio, assignor to Magnode Products, Inc., Trenton, Ohio
Filed Nov. 8, 1971, Ser. No. 196,367
Int. Cl. C23b *5/70*
U.S. Cl. 204—297 R **17 Claims**



A fitting for fluid systems and the like comprising a body member having an annular wall and having means on the outside surface thereof for securing the body member to a support member, the body member being tubular and having opened upper and lower ends, and having an annular baffle spaced from the ends and dividing the body member into two separate chambers. The body member includes a pair of diametrically opposed openings in the wall adjacent the baffle opening into one of the chambers, the other of the chambers forming a socket. The securing means is positioned above the wall opening. Also, the one of the chambers, the wall openings, the outside wall of the body member from the wall opening downwardly to beyond the lower end thereof, and the lower end of the wall member are covered with a plastic insulating coating.

ERRATUM

For Class 208—120 see:
Patent No. 3,718,553

3,718,574
METHOD FOR HEAVYING POLYCYCLIC SUBSTANCES
Tadashi Araki, Kiro Asano, Hitoshi Takita, and Takao Awao, Tokyo-to, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Chuo-ku, Tokyo-to, Japan
Filed Dec. 28, 1970, Ser. No. 101,510
Claims priority, application Japan, Dec. 29, 1969, 45/105,232
Int. Cl. C10c *3/02*
U.S. Cl. 208—44 **5 Claims**

Method for heavying polycyclic substance, wherein the crude material is treated with an oxidizing agent, and then treated with ammonia or amines.

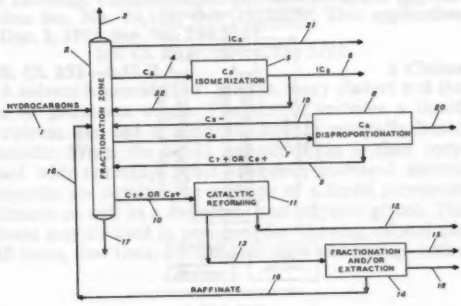
3,718,575
HYDROCRACKING FOR LPG PRODUCTION
Charles H. Watkins, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plains, Ill.
Filed July 12, 1971, Ser. No. 161,586
Int. Cl. C10g *13/02, 31/14, 37/04*
U.S. Cl. 208—59 **7 Claims**

Liquefied petroleum gas, herein referred to as "LPG," is produced from heavy hydrocarbon distillates through the utilization of a two-stage hydrocracking process. The product effluent from the first stage is separated to provide a vaporous gasoline boiling range fraction which is utilized as the charge stock to the second stage.

3,718,576
GASOLINE PRODUCTION

Thomas R. Hughes, Orinda, and Robert P. Sieg, Piedmont, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 3,303, Jan. 16, 1970, and a continuation-in-part of Ser. No. 3,306, Jan. 16, 1970. This application July 1, 1970, Ser. No. 51,488
Int. Cl. C10g *39/00*
U.S. Cl. 208—93 6 Claims

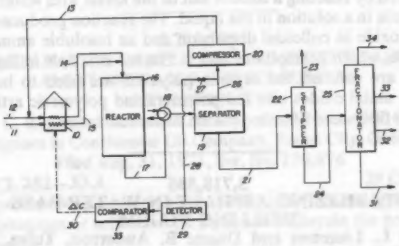


A process for producing gasoline from a hexane-rich hydrocarbon feed which comprises disproportionating the hexane-rich feed to obtain at least C_5 hydrocarbons and C_7+ hydrocarbons, and catalytically reforming the C_7+ hydrocarbons to obtain reformate. Preferably, the normal pentane hydrocarbons obtained from disproportionating the hexane are fed to a C_5 isomerization process to obtain isopentane. Preferably, a common fractionation zone is used for the disproportionation, catalytic reforming and C_5 isomerization processes.

3,718,577
CONTROL OF HYDROCRACKING PROCESS FOR CONSTANT CONVERSION

Yuen Chen Nai, Titusville, and Yuan Yan Tsoung, Trenton, both of N.J., assignors to Mobil Oil Corporation

Filed July 16, 1971, Ser. No. 163,161
Int. Cl. C10g *13/00*; G01n *27/16, 27/62*
U.S. Cl. 208—108 7 Claims

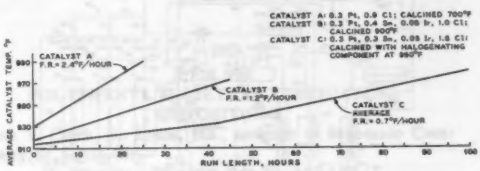


The level of conversion of a hydrocracking operation is controlled as a function of the amount of carbon determined in the recycle gas stream separated from the effluent of the hydrocracking operation.

3,718,578
REFORMING WITH A PLATINUM-TIN-IRIDIUM CATALYST

Waldeen C. Buss, Richmond, and Harris E. Kluksdahl, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Feb. 20, 1970, Ser. No. 13,044
Int. Cl. C10g *35/08*
U.S. Cl. 208—139 5 Claims


CATALYST A: 0.3 Pt, 0.9 Cl; CALCINED 700°F
CATALYST B: 0.3 Pt, 0.4 Sn, 0.05 Ir, 1.0 Cl; CALCINED 900°F
CATALYST C: 0.3 Pt, 0.3 Sn, 0.05 Ir, 1.0 Cl; CALCINED WITH HALOGENATING COMPONENT AT 890°F
CATALYST A F.R.= 2.4°F/HOUR
CATALYST B F.R.=1.2°F/HOUR
CATALYST C AVERAGE F.R.= 0.7°F/HOUR
AVERAGE CATALYST TEMP. °F
RUN LENGTH, HOURS

Reforming a naphtha in the presence of hydrogen with a catalyst composition comprising a porous solid carrier, 0.01 to 3 weight percent platinum, 0.01 to 5 weight percent tin; and 0.001 to 1 weight percent iridium; also the novel supported platinum-tin-iridium catalyst.

3,718,579
PROCESS FOR CHARGING CATALYST

George A. Uhl, Markham, and Lloyd A. Baillie, Homewood, both of Ill., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Sept. 24, 1971, Ser. No. 183,690
Int. Cl. C10g *23/02*
U.S. Cl. 208—143 19 Claims

An improved process for charging a solid substantially spherical catalyst to a fixed bed reactor by charging the catalyst at a rate of fill of the reactor of up to about 17 inches per minute and in a manner such that the catalyst particles are distributed at substantially the same rate over the entire surface of the catalyst bed.

3,718,580
ABSORBING OLEFINS WITH A COPPER-EXCHANGED TYPE X ZEOLITE

Donald H. Rosback, Elmhurst, Ill., assignor to Universal Oil Products Company, Des Plains, Ill.

Division of Ser. No. 865,979, Oct. 13, 1969, Pat. No. 3,649,176. This application Aug. 16, 1971, Ser. No. 172,323
Int. Cl. C10g *25/04*
U.S. Cl. 208—310 5 Claims

A new composition of matter, a method for the preparation of a copper-exchanged Type X structured zeolite and a separation process employing the same. The zeolite sorbent is prepared by a procedure employing an aqueous ion exchange step and a final activation step including contacting a copper-exchanged zeolite with a mixture containing a cuprous salt and a hydrocarbon. The process involves the selective separation of olefinic hydrocarbons from saturated hydrocarbons and employs a Type X structured zeolite containing copper cations at a portion of the cationic exchange sites within the zeolite. The olefins are selectively retained by the sorbent and are removed in a concentrated form by a desorption step.

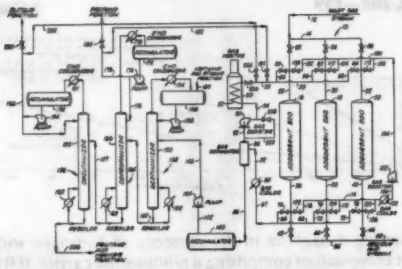
3,718,581
ADSORPTION PROCESS FOR RECOVERING CONDENSIBLE COMPONENTS FROM A GAS STREAM

Joseph A. Kleinpeter, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed March 2, 1971, Ser. No. 120,081
Int. Cl. C10g *5/02*
U.S. Cl. 208—340 5 Claims

The present invention relates to an improved cyclic adsorption process for recovering condensible components from a

gas stream wherein the condensible components are removed from the adsorbent by contacting it with a heated regeneration gas stream and after being recovered are separated into liquid fractions of differing molecular weights. By the present invention, the adsorbent is periodically washed with quantities of



one or more of the recovered liquid fractions so that components adsorbed thereon which are not readily removed by the heated regeneration gas stream are removed by the solvent action of the liquid fraction or fractions thereby preventing the build-up of said components on said adsorbent and the resultant decrease in absorption capacity.

3,718,582

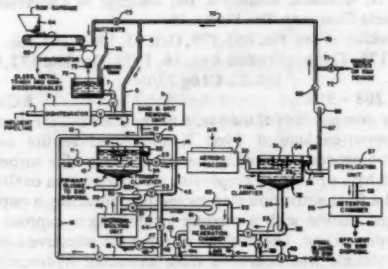
MICROBIAL BIOLYSIS PROCESS

Edmund G. Smith, 206 Watchung Ave., Upper Montclair, N.J., and John W. Hood, 43 John Street, Ridgewood, N.J.

Continuation-in-part of Ser. No. 765,243, Oct. 4, 1968, Pat. No. 3,591,491. This application March 23, 1971, Ser. No. 127,135

Int. Cl. C02c *1/06*

U.S. Cl. 210—6 **11 Claims**



The method of treating sewage or other biodegradable waste materials in a system including an aerobic process wherein a settleable sludge is formed which comprises returning a part or all of the sludge to a point in advance of the input of the aerobic process and subjecting a selected portion of the returned sludge to heat or vacuum under conditions suitable for the biolysis of the microorganisms in said portion, the portion being selected to meet the food requirements of the active aerobic organisms in the aerobic process. The portion subjected to biolysis is so regulated that substantially all of the biodegradable matter is consumed and only a relatively small quantity of said matter is removed to end disposal.

3,718,583

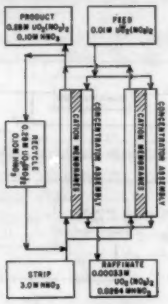
METHOD FOR THE CONCENTRATION OF HEAVY METAL CATIONS USING ION SELECTIVE MEMBRANES

James S. H. Wu, Grifton, N.C., and Broughton L. Baker, Columbia, S.C., assignors to the United States of America as represented by the United States Atomic Energy Commission

Continuation of abandoned application Ser. No. 18,579, Mar. 11, 1970. This application Nov. 29, 1971, Ser. No. 203,088

Int. Cl. B01d *13/00*

U.S. Cl. 210—22 **1 Claim**



The concentration of heavy metal cations, such as uranyl or plutonium cations, from ionic solutions separated by an ion selective membrane, wherein the difference in chemical potentials of the various ion species provide the driving force to effect a transfer across the membrane, is enhanced by separating a portion of the extract solution being concentrated in heavy metal cation product and recirculating that portion along with the initial strip solution into contact with the membrane. The preferred ratio of the recirculating portion to the initial strip solution is between about 1 to 1 and 5 to 1.

3,718,584

COLLOIDAL METAL OXIDE SOLS IN POLAR ORGANIC SOLVENTS

Lawrence F. Beste, Wilmington, Del.; Edward B. Jones, Waynesboro, Va., and Paul C. Yates, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 30, 1970, Ser. No. 93,861

Int. Cl. C09d *5/18*; C09k *3/28*; B27k *3/16*

U.S. Cl. 252—8.1 **9 Claims**

Sols of Sb_2O_5, SnO_2 and TiO_2 in organic polar liquids are prepared by reacting a soluble salt of the metal with water and ammonia in a solution in the liquid. The reaction produces the metal oxide in colloidal dispersion and an insoluble ammonium salt, which precipitates and is filtered off. Sols in liquids which are solvents for organic polymers are used to incorporate metal oxides into the polymers and polymeric articles such as fibers and films to provide flame resistance.

3,718,585

STABILIZING ASPHALT IN WATER-BASE DRILLING FLUIDS

James L. Lummus and Duane B. Anderson, Tulsa, and Carl D. Edwards, Broken Arrow, Okla., assignors to Amoco Production Company, Tulsa, Okla.

Filed Aug. 2, 1971, Ser. No. 168,303

Int. Cl. C10m *3/14, 3/08*

U.S. Cl. 252—8.5 C **10 Claims**

The action of an agent for causing solid particles of asphalt to enter into and form a stable suspension in water-base drilling fluid is improved by prehydrating the

agent and dissolving the prehydrated agent in normal propanol and water before use. The asphalt-stabilizing agent may be a limited class of ethoxylated alkyl phenols or ethoxylated polypropylene glycols. The monobutyl ether of ethylene glycol or of diethylene glycol can be used in place of normal propanol.

3,718,586
SOLVENT FOR CLEANING WELL BORES, FLOWLINES, ETC.

William C. Rollo, Box 756, and John D. Melancon, Rte. 1, Box 399, both of Winnie, Tex. 77665

No Drawing. Continuation-in-part of abandoned application Ser. No. 74,158, Oct. 21, 1970. This application Dec. 2, 1971, Ser. No. 204,351
Int. Cl. B01f *1/00*; C23g *5/02*
U.S. Cl. 252—8.55 B 5 Claims

A solvent is provided for paraffin, waxy sludges and the like of petroleum origin. The solvent includes a liquid petroleum gas and a composition of a normally liquid aromatic. When the liquid petroleum gas is then combined with normally liquid aromatic, increased solvent properties are obtained by addition of a liquid petroleum sulfonate as well as a surfactant and ethylene glycol. The solvent may be used in processes for cleaning oil and gas well bores, flow lines, transmission lines and storage tanks.

3,718,587
CYANURIC ACID DERIVATIVES AS FINISH ADDITIVES

Roop S. Bhakuni, Copley, and Joseph L. Cormany, Jr., Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Oct. 5, 1970, Ser. No. 78,251
Int. Cl. D06m *13/34*
U.S. Cl. 252—8.6 1 Claim

Cyanuric acid derivatives as adhesion promoting agents are added to the finish or spinning composition applied to tire yarn used in making tire reinforcing cord as a means of promoting adhesion between the cord and the rubber when using a conventional R/F/L adhesive.

3,718,588
METHOD FOR REDUCING FRICTION ON CONVEYORS WITH AQUEOUS SALTS OF PHOSPHATE ESTERS

Thomas J. Bellos, Kirkwood, and Franklin E. Mange, St. Louis, Mo., assignors to Petrolite Corporation, Wilmington, Del.

No Drawing. Filed May 13, 1968, Ser. No. 730,214
Int. Cl. C10m *3/40*, *3/04*
U.S. Cl. 252—32.5 22 Claims

Method using lubricant comprising water and a salt of a phosphate ester on conveyors.

3,718,589
PREPARATION OF NEUTRAL AND HIGHLY BASIC ALKYLPHENATES AND SULFURIZED ALKYLPHENATES

Lynn C. Rogers, and Mack W. Hunt, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Aug. 31, 1971, Ser. No. 176,676
U.S. Cl. 252—33.4 29 Claims

A process for preparing neutral and highly basic magnesium alkylphenates or sulfurized alkylphenates wherein the process comprises:

a. forming an admixture of alkylphenol or sulfurized alkylphenol, nonvolatile diluent oil, and a volatile process solvent;
b. adding a stoichiometric neutralizing amount of a carbonated magnesium alcoholate at a temperature of from about 30°C to about 60°C;
c. heating the mixture to a reflux temperature of from about 65°C to about 90°C, and maintaining the mixture at this reflux temperature for a period of from about 20 minutes to about 1½ hours; then
d. removing the volatile materials by heating.

If a highly basic (overbased) product is to be prepared, the same steps are followed as in the production of the neutral phenate, except that after neutralization, and prior to removing the volatile materials from the mixture, carbonated magnesium alcoholate and water are added concurrently to the mixture.

3,718,590
POLYPHENYL THIOETHER LUBRICATING COMPOSITIONS

Frank S. Clark, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 28, 1970, Ser. No. 102,152
Int. Cl. C10m *1/48*
U.S. Cl. 252—46.7 5 Claims

Lubricating compositions comprising polyphenyl thioethers, polyphenyl ethers-thioethers or mixtures thereof and containing small amounts of an organic phosphinic acid have improved lubricating properties. These compositions are useful as lubricants over wide temperature ranges.

3,718,591
LUBRICANT COMPOSITIONS CONTAINING TERPOLYMERS

Rudolf J. A. Eckert, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Continuation of Ser. No. 776,778, Nov. 18, 1968, abandoned. This application Jan. 25, 1971, Ser. No. 109,674
Claims priority, application United Kingdom, Nov. 27, 1967, 53761
Int. Cl. C10m *1/46*, *1/28*
U.S. Cl. 252—49.8 4 Claims

Lubricating compositions containing a terpolymer of ethylene, with an alkyl ester of an unsaturated carboxylic acid, and with an olefinically unsaturated compound containing either a phosphorus atom or a heterocyclic nitrogen atom exhibit good thermal stability, viscosity index, and dispersant properties.

3,718,592
PROTECTION AGAINST RADIANT HEAT ENERGY

Robert A. Prosser, 15 Maire Ave, Natick, Mass.

Filed Nov. 21, 1969, Ser. No. 878,945
Int. Cl. F16l *59/08*; C04b *43/00*
U.S. Cl. 252—62 8 Claims

This invention relates to a process for providing protection against intense radiant heat energy such as that released by a thermonuclear explosion. The process is characterized by disposing a dye in the vapor state between the source of radiant heat energy and an object to be protected. The chromophore groups of the dye intercept photons primarily in the ultra-violet, visible and infra-red regions and reradiate and/or dissipate heat energy to the air thereby decreasing the heat energy reaching the object to be protected. The dyes contemplated by the invention are those that contain chromophore groups defined as molecules or portions thereof capable of intercepting photons and which are stable in the vapor state. In a preferred embodiment, the dye is combined with a carrier which secures the dye to a substrate to be protected and preferably is capable of vaporizing or gassing as opposed to liberating smoke, at least in part, at relatively low temperatures, as required for protection of the substrate, to liberate dye which is vaporized and propelled towards the source of radiant heat energy by the gaseous decomposition products of the carrier.

3,718,593

PROCESS FOR THE PRODUCTION OF AN ELECTROPHOTOGRAPHIC LIQUID DEVELOPER CONTAINING GELATIN

Yasuo Tamai, Asaka-shi, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 5, 1970, Ser. No. 9,042
Claims priority, application Japan, Feb. 5, 1969, 44/8517
Int. Cl. G03g 9/04
U.S. Cl. 252—62.1 10 Claims

A process for producing a liquid developer for developing electrostatic latent images which comprises (1) adding to an aqueous solution of gelatin, the concentration of the gelatin being in the range of approximately 1 to 20 percent by weight, an alcohol in an amount less than that of causing the precipitation of gelatin to provide a solution of gelatin in a water-alcohol mixed solvent, (2) dispersing the solution thus prepared in an organic solvent which is miscible with water but is a non-solvent for gelatin to form a dispersion of fine gelatin particles where the amount of said organic solvent is at least 10 times the amount of the mixed gelatin solution of water and alcohol and recovering the fine gelatin particles from the dispersion, and (3) dispersing the fine gelatin particles thus recovered in a carrier having an electric resistance of higher than $10^{10}\Omega$cm.

3,718,594

METHOD OF PREPARING MAGNETICALLY RESPONSIVE CARRIER PARTICLES

Howard A. Miller, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 799,966, Feb. 17, 1969, Pat. No. 3,632,512. This application Nov. 30, 1970, Ser. No. 93,798
Int. Cl. G03g 9/02
U.S. Cl. 252—62.1 6 Claims

Ferromagnetic carrier particles having uniform surface and triboelectric properties can be prepared by treatment of commercial iron powders in an aqueous acid solution, followed by removal of acid, rinsing and controlled drying to induce or exclude oxidation. The resultant particles can subsequently be overcoated with a thin, uniform, continuous film of a nonferrous material such as metal or a resinous material. These carrier particles are useful for applying electroscopic toner material to electrostatic latent images.

3,718,595

METHOD OF IMPROVING THE PIEZOELECTRIC PROPERTIES OF CERAMICS

Sadayuki Takahashi and Norio Tsubouchi, Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Minato-ku, Tokyo, Japan

No Drawing. Filed Mar. 20, 1972, Ser. No. 236,491
Int. Cl. C04b 35/46, 35/48
U.S. Cl. 252—62.9 14 Claims

Piezoelectric properties of ceramics of the type

$$Pb(Li_{1/4}M_{3/4})O_3\text{-}PbZrO_3\text{-}PbTiO_3$$

(where M is either Nb, Ta or Sb),

$$Pb(Fe_{1/3}Nb_{2/3})\text{-}PbZrO_3\text{-}PbTiO_3$$

(where M is either Nb or Sb),

$$Pb(Ni_{1/3}Nb_{2/3})O_3\text{-}PbZrO_3\text{-}PbTiO_3$$

and $Bi(Li_{1/2}M_{1/2})O_3$-$PbZrO_3$-$PbTiO_3$ (where M is either Nb, Ta or Sb) are improved by thermally diffusing Cr in said ceramics whereby to provide an average amount by weight of about 0.05 to 0.5% Cr_2O_3 therein.

3,718,596

FUNCTIONAL FLUID COMPOSITIONS

William R. Richard, Jr., Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 16, 1970, Ser. No. 11,849
Int. Cl. C09k 3/00
U.S. Cl. 252—78 15 Claims

Phosphate ester base functional fluid compositions containing small amounts of water and a mixture of high and low molecular weight polymers of the alkyl esters of α-β unsaturated aliphatic mono-carboxylic acids as viscosity index improvers inhibit erosion of material and damage to mechanical members in a hydraulic system.

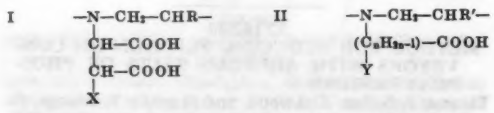
3,718,597

WASHING, BLEACHING AND CLEANSING AGENTS CONTAINING COPOLYMERIC N-ALKYLCARBOXYLIC ACID ALKYLENEIMINES

Achim Werdehausen; Ullrich Jahnke, both of 4019 Monheim; Gunter Jakobi, 4010 Hilden, and Guntram Walther, 4000 Dusseldorf-Eller, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

Filed Dec. 1, 1970, Ser. No. 94,213
Claims priority, application Germany, Dec. 1, 1969, P 19 60 140.2The portion of the term of this patent subsequent to March 21, 1989, has been disclaimed.
Int. Cl. C11d 7/54
U.S. Cl. 252—102 6 Claims

A washing, bleaching and cleansing agent having a content of from 50 to 99.9 percent, by weight, of customary components of washing, bleaching and cleansing agents and from 0.1 to 50 percent, by weight, of salts of at least one copolymeric N-alkylcarboxylic acid-alkyleneimine, said copolymeric N-alkylcarboxylic acid-alkyleneimine having an average molecular weight of from 500 to 500,000 and the recurring N-alkylcarboxylic acid-alkyleneimine units are of different structure of the formulas I and II



where R represents a member selected from the group consisting of H and CH_3, R′ represents a member selected from the group consisting of H and CH_3, X represents a member selected from the group consisting of H and $-CH_2-COOH$, Y represents a member selected from the group consisting of H, $-CH_2-COOH$ and $-CH_2-CH_2COOH$ and n represents an integer of from one to two, the ratio of recurring N-alkylcarboxylic acid-alkyleneimine units of formula I to those of formula II being from one to 100 to 100 to one.

3,718,598

PREPARATION OF CHLORIDE-FREE HYPOCHLOROUS ACID SOLUTIONS

John A. Wojtowicz, Cheshire; Milton Lapkin, Woodbridge, and Mohindar S. Puar, Hamden, all of Conn., assignors to Olin Mathieson Chemical Corporation

Division of Ser. No. 792,761, Jan. 21, 1969, Pat. No. 3,578,400. This application Aug. 5, 1970, Ser. No. 61,456
Int. Cl. C01b 11/04
U.S. Cl. 252—187 R 2 Claims

Solutions of hypochlorous acid (HOCl), free chloride and chlorine are prepared by extraction of aqueous chlorination

mixtures containing HOCl and chloride using an extraction solvent selected from the group consisting of lower alkyl ketones, lower alkyl cyanides and lower alkyl esters of lower alkanoic acids. The lower alkyl suitably contains one to five carbon atoms and the lower alkanoic acids suitably contain one to five carbon atoms. The resulting solutions, containing from about 0.5 to about 50 percent by weight of HOCl, are useful for chlorohydrination reactions where the presence of chloride or chlorine is deleterious.

3,718,599

STABILIZATION OF OXALATE ESTER SOLUTIONS DURING STORAGE

Michael McKay Rauhut, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed June 29, 1970, Ser. No. 56,084
Int. Cl. C09k *3/00*
U.S. Cl. 252—188.3 **8 Claims**

This invention relates to a means and method for improving the storage stability of a chemiluminescent reaction component comprising an oxalic-type compound in a solvent, by adding a weak acid thereto, said reaction component being capable of providing chemiluminescent light on admixture with a hydroperoxide compound in the presence of a fluorescer.

3,718,600

METHOD OF MANUFACTURING A LUMINESCENT SILICATE ACTIVATED BY BIVALENT EUROPIUM

Marinus Gerardus Antoine Tak, and Otto Jan Van Klinken, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 23, 1971, Ser. No. 155,840
Claims priority, application Netherlands, July 1, 1970, 7009688
Int. Ci. C09k *1/54, 1/62*
U.S. Cl. 252—301.4 F **7 Claims**

A luminescent silicate activated by bivalent europium defined by the formula $Ba_{1-x-p}Sr_xEu_pZrSi_3O_9$ which O x 0.2 and 0.002 p 0.10 is prepared by starting from a mixture of barium strontium disilicate, at least 1.5 mol of ZrO_2 and at least 1 mol of SiO_2 per mol of disilicate. The mixture, which also comprises europium, is heated at a temperature of between 1,200° and 1,400°C is a reducing atmosphere.

3,718,601

FLUORESCENT HIGH ALUMINA SUBSTRATES

Andrew Gomperz Dental, Plainfield; Le Grand Gerard Van Uitert, Morris Township, Morris County, and John Charles Williams, Whippany, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 4, 1971, Ser. No. 103,418
Int. Cl. C09k *1/10*
U.S. Cl. 252—301.4 R **9 Claims**

Substrate-supported circuitry is manufactured by forming circuitry on a high alumina dielectric substrate having a fluorescent character arising from the incorporation of both europium oxide plus yttrium (and/or lanthanum and/or gadolinium) oxide, with the latter oxide (s) acting as a dispersing agent. Testing the integrity of the circuitry is accomplished by irradiating the substrate with ultraviolet light and sensing the passage of any visible light through the circuitry that may occur in the presence of defects.

3,718,602

LIQUID MEDIUM FOR OPTICAL THIRD HARMONIC GENERATION

Paul P. Bey, Oxon Hill, John F. Giuliani, Kensington, and Herbert Rabin, Bethesda, Md., assignors to the United States of America as represented by the Secretary of the Navy

Original application Sept. 25, 1968, Ser. No. 762,553. Divided and this application July 19, 1971, Ser. No. 163,677
Int. Cl. C09k *1/02*
U.S. Cl. 252—301.2 R **5 Claims**

This invention is directed to a liquid medium of dye fuchsin in hexafluoroacetone sesquihydrate or hexafluoroisopropanol which generates an enhanced third harmonic light wave of the 1.6 micron neodymium laser line.

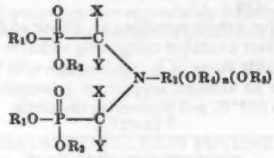
3,718,603

METHODS OF INHIBITING CORROSION WITH SUBSTITUTED TERTIARY AMINE PHOSPHONATES

Robert S. Mitchell, Webster Groves, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 4, 1971, Ser. No. 169,130
Int. Cl. C23f *11/16*
U.S. Cl. 252—389 A **20 Claims**

Substituted tertiary amine phosphonates of the general formula



wherein R_1, R_2, R_3, R_4, R_5, X and Y are hereinafter defined and n is 1 - 20, alone or in combination with zinc, dichromate, silicates, certain thiols and 1,2,3-triazoles and/or mixtures thereof, are disclosed as inhibiting the corrosion of metals by oxygen-bearing waters.

3,718,604

CORROSION INHIBITOR CONTAINING A WATER SOLUBLE EMULSION OF A FATTY AMINE WITH A CATIONIC EMULSIFIER

Gerhard W. Scherf, Mineral Springs Road, RR-3, Dundas, Ancaster, Ontario, and Gary C. Pfaff, 246 York Road, Dundas, Ontario, both of Canada

Filed Aug. 27, 1970, Ser. No. 67,570
Int. Cl. C23f *11/16, 11/14*
U.S. Cl. 252—391 **7 Claims**

A composition and method for inhibiting steam-corrosion, comprising adding to the water a stable, cationic, fatty amine emulsion which breaks down upon heating, thereby allowing the fatty amine to enter the vapor phase and coat the interior surfaces exposed to the steam. Optionally, an ethoxylated straight chain aliphatic acid may be added where the boiler water containers inorganic salt impurities, or is at a high temperature in order to maintain stability of the emulsion.

3,718,605

WIDE RANGE COLORIMETRIC REAGENT COMPOSITION FOR CHLORINE

Lester F. M. Storm, Pasadena, Calif., assignor to Sterilizer Control Royalties, North Hollywood, Calif.

No Drawing. Filed Mar. 22, 1971, Ser. No. 126,955
Int. Cl. G01n *31/16*
U.S. Cl. 252—408 **9 Claims**

Reagent compositions for colorimetrically measuring the concentration of chlorine in water samples under controlled acid conditions contain ortho tolidine alone, or

combinations with lesser proportions of acid fuchsin or acid methyl orange. A wide range of colors results which are better visually differentiated than by single color agents producing only differences in intensity for varying concentrations of chlorine.

3,718,606

SILVER HALIDE MONOCRYSTAL PARTICLE-TRACT DETECTORS DOPED WITH MANGANESE

Gunter Haase, Frankfurt am Main, and Erwin Schopper, Koenigstein/Taunus, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 2, 1970, Ser. No. 86,277

Claims priority, application Germany, Nov. 21, 1969, P 19 58 425.9

Int. Cl. G01t *3/00, 5/10*

U.S. Cl. 252—408 4 Claims

The photographic properties in particular the light sensitivity of silver halide monocrystal-track detectors are highly improved by adding manganese ions as doping agents.

3,718,607

CATALYST FOR DEHYDROGENATION OF ALKANES

George Robert Martin, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 19, 1971, Ser. No. 164,150

Int. Cl. B01j *11/74*

U.S. Cl. 252—439 7 Claims

A process for dehydrogenating an alkane to form an olefin by passing it over a catalyst comprising nickel or cobalt sulfide and cerium oxide alone or in combination with barium oxide, preferably on an alumina support, at a temperature of from about 550° to 625° C. and recovering the olefin.

3,718,608

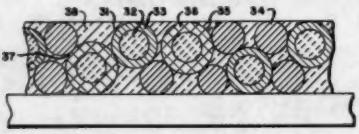
RESISTOR COMPOSITIONS FOR MICROCIRCUITRY

Daniel W. Mason, Peabody; Henry H. Nester deceased, late of Peabody, Mass., by Dianne L. Nester, administratrix, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 6, 1969, Ser. No. 13,918

Int. Cl. H01b *1/02*; B44d *1/02*

U.S. Cl. 252—514 2 Claims



Resistor and conductor paste compositions and structures formed therefrom for hybrid integrated circuits are disclosed in which a metal which substantially contributes the electrical conductivity is coated over micron-sized glass particles. The metal coated particles are then mixed and fused into a glass matrix, the whole adhering to a ceramic substrate. This structure results in greater conductivity for a given quantity of the metal.

Efficient metals for the purpose are silver and the noble metals and alloys of these relatively expensive materials.

3,718,609

LIQUID DETERGENT COMPOSITIONS

Dean R. Weimer, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Int. Cl. C11d *1/02*

Filed April 5, 1971, Ser. No. 131,461

U.S. Cl. 252—545 7 Claims

A liquid detergent composition is provided having an aqueous layer and a layer of a liquid water-immiscible oily material, which composition when shaken, forms a temporary oil-in-water emulsion. The aqueous layer contains a foam-producing water-soluble organic detergent, a non-emulsifying foam stabilizer, and water.

3,718,610

CURABLE MIXTURES OF EPOXIDE RESINS AND PIPERIDINE DERIVATIVES

Helmut Zondler, Allschwil, Switzerland, and Wolfgang Pfleiderer, Konstanz, Germany, assignors to Ciba-Geigy AG, Basle, Switzerland

Filed March 17, 1971, Ser. No. 125,381

Claims priority, application Sweden, March 23, 1970, 4338/70

Int. Cl. C08g *30/14*

U.S. Cl. 260—2 N 13 Claims

Curable moulding compositions, coating compositions and adhesive compositions which contain a polyepoxide compound, for example a liquid polyglycidyl ether of bisphenol A, and, as the curing agent, a substituted 4-amino-3-aminomethyl-piperidine for example 1-methyl-4-amino-3-aminomemethylpiperidine. The curing of the curable mixtures according to the invention to give shaped articles and the like is appropriately carried out in the temperature range of 20° to 150° C.

3,718,611

URETHANE FOAMS CONTAINING HALOGEN CONTAINING POLYMERS AND METHODS FOR PREPARING THE SAME USING CERTAIN CATALYSTS

Edwin M. Maxey, Stow, and John T. Harrington, Akron, Ohio, assignors to The General Tire & Rubber Company

No Drawing. Filed Apr. 24, 1969, Ser. No. 819,087

Int. Cl. C08g *41/04, 22/38*

U.S. Cl. 260—2.5 BE 22 Claims

The discoloration of low density, flexible polyurethane foams containing halogen containing polymers such as polyvinyl chloride is reduced or prevented by using certain sterically hindered tertiary amines as catalysts, i.e., those containing a well-shielded nitrogen atom, for example, N-methyl dicyclohexyl amine.

3,718,612

PROCESS FOR PRODUCING A CIGARETTE FILTER MATERIAL

Robert L. Strickman, River Vale, N.J., assignor to The Robert L. Strickman Foundation, Inc., New York, N.Y.

Division of Ser. No. 721,563, April 11, 1968, Pat. No. 3,618,618, which is a continuation-in-part of Ser. No. 559,495, Dec. 6, 1966, abandoned, which is a continuation-in-part of Ser. No. 424,626, Jan. 11, 1965, abandoned, which is a continuation-in-part of Ser. No. 59,035, Sept. 28, 1960, abandoned. This application June 16, 1970, Ser. No. 57,842

Int. Cl. C08g *22/44*

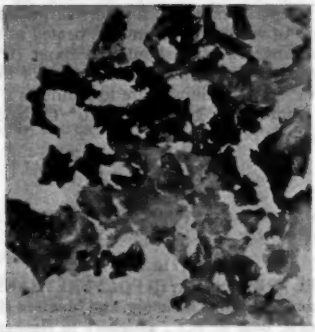
U.S. Cl. 260—2.5 BD 12 Claims

Filter materials for filtering aerosols, such as cigarette filters for filtering tobacco smoke, are provided comprising rigid polyurethane particles devoid of any cellular structure. Preferably the particles are granular and of jagged, spiny, cragged nature. The rigid polyurethane is produced from a polyol and a polyisocyanate.

The particles are produced by first preparing a rigid polyurethane foam, preferably with the aid of a blowing agent, granulating the foam, treating the granules with hot water or steam to hydrolyze unreacted isocyanate and other free materials to render them inert, and then dried.

Preferably, inorganic additives may be present during the preparation of the rigid polyurethane foam, such as the lower alkyl silicates, e.g., ethyl silicate, and water soluble salts of the

acids of metals of groups VA and VIA of the Periodic Table, e.g., sodium tungstate.



Inorganic additives may be added to the filter particles, such as an alkaline earth metal carbonate, silicate or hydroxide.

3,718,613
POLYURETHANE FOAM RETICULATED BY FIRE-POLISHING METHOD

Marvin T. Conger and Theodore A. Evans, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of application Ser. No. 784,188, Dec. 16, 1968. This application Oct. 26, 1970, Ser. No. 84,167
Int. Cl. C08g *22/44, 22/08*
U.S. Cl. 260—2.5 BD 4 Claims

A reticulated foam made by fire polishing a cellular product made by reacting a mixture of a hydrocarbon polyol of 500 to 10,000 molecular weight, an organic polyisocyanate, and a blowing agent, where the blowing agent may be water or other low boiling substances.

3,718,614
POLYMERIC VISCOSITY CONTROL ADDITIVES FOR SILICA THIXOTROPIC COMPOSITIONS

Nelda Marjorie Smyth, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 23, 1971, Ser. No. 118,165
Int. Cl. C08f *45/40, 45/34*
U.S. Cl. 260—31.8 R 1 Claim

Novel thixotropic compositions and processes for their formation employing as viscosity control additives therein members selected from the group consisting of: 1) homopolymers and copolymers of poly(alkylene oxides) having terminal alkyl groups; 2) homopolymers and copolymers of poly(vinyl alkyl esters) and poly(vinyl alkyl ethers) with the optional inclusion of minor amounts of alkylenes and styrenes in said copolymers; 3) 1:1 alternating copolymers of maleic anhydride with alkylenes and styrenes; 4) cellulose esters and mixed cellulose esters of 2-, 3- and 4-carbon acids and mixtures of said esters with the poly(alkylene oxides).

3,718,615
HALOGENATED POLYMERIC COMPOSITIONS CONTAINING ZINC BORATE

William G. Woods, Fullerton, Joseph G. Whiten, Dublin, and Nelson P. Nies, Laguna Beach, all of Calif., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 725,169, April 29, 1968, abandoned. This application March 5, 1971, Ser. No. 121,603
Int. Cl. C08h *51/04*; C08f *45/04*; C09d *5/18*
U.S. Cl. 260—28 14 Claims

Halogenated polymeric compositions containing a fire retarding amount of zinc borate of the formula $2ZnO{\cdot}3B_2O_3{\cdot}3.5H_2O$.

3,718,616
HIGH IMPACT POLYVINYL-AROMATIC COMPOSITIONS

Leslie A. Muirhead, Wilmslow, England, assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 759,523, Sept. 12, 1968, abandoned. This application April 14, 1971, Ser. No. 134,054
Claims priority, application Australia, Nov. 10, 1968, 44670
Int. Cl. C08f *45/28, 45/52*
U.S. Cl. 260—28.5 B 6 Claims

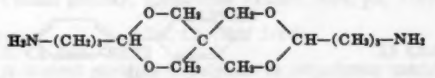
The impact strength of polyvinyl-aromatic compositions such as impact polystyrene is appreciably increased by the addition of at least 13 percent weight of petroleum jelly.

3,718,617
MINIMUM IRRITATION POTENTIAL POTTING COMPOUND

Lewis M. Royal, Attleboro Falls, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

No Drawing. Filed July 29, 1970, Ser. No. 59,355
Int. Cl. C08g *51/34*
U.S. Cl. 260—30.4 ED 20 Claims

A minimum irritation potential potting compound is provided which cures into potting possessing the thermal shock resistance, dimensional stability, adhesiveness to soft metals, electrical resistivity and moisture resistance required for potting electrical devices such as, for example, tubular motor protectors. The potting compound cures at room temperature and prior to cure has a viscosity under flow conditions which is sufficiently low to facilitate application and a thixotropic index of between 2 and 3, high enough to prevent seepage and sagging. The novel potting formulation comprises a mixture of an alkyl glycidyl ether reactive diluent having alkyl chain lengths of between 12 and 14 carbon atoms and an amine-monofunctional glycidyl ether adduct curing agent formed by the reaction of two moles of a heterocyclic spiro diamine represented by the formula:



with one mole of butyl glycidyl ether, with a conventional glycidyl ether of bisphenol A, fillers, thixotropic materials and polar compounds. A novel low toxicity hardener composition comprising the above stated amine-glycidyl adduct and one or more ethylene oxide or propylene oxide adducts of diethylene triamine or triethylene tetramine is also provided, as is a method of preparing potting which involves minimum exposure of personnel to skin irritation.

3,718,618
EPOXY RESIN COMPOSITIONS CONTAINING A PARTIAL ACID-ADDITION SALT OF AROMATIC POLYAMINE AND WATER SOLUABLE AMINE

Herman B. Wagner, Perkasie, Pa., and David S. Weiant, Laurel Township, Moorestown County, N.J., assignors to Tile Council of America Inc., New York, N.Y.

Filed April 6, 1970, Ser. No. 26,112
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 EN 15 Claims

Water-cleanable epoxy resin compositions capable of curing rapidly at ambient temperatures which contain an epoxy resin, a partial acid-addition salt of an aromatic polyamine and a water-soluble, strongly basic amine are described.

3,718,619
CURING POLYURETHANE PREPOLYMERS WITH LIQUID EXTENDER COMPRISING 4,4'-METHYLENEBIS(2-CHLOROANILINE) AND ETHYLENE OXIDE CAPPED BISPHENOL A

Norman E. Rustad, Barrington, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Aug. 27, 1971, Ser. No. 175,699
Int. Cl. C08g *22/14*
U.S. Cl. 260—47 CB 5 Claims

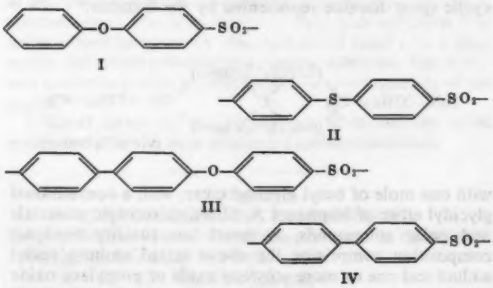
This invention relates to the curing of isocyanate terminated polyurethane prepolymers with a liquid extended consisting of 4,4'-methylenebis(2-chloroaniline) and ethylene oxide capped bisphenol A.

3,718,620
AROMATIC POLYSULPHONE-DIPHENYL SULPHONE BLENDS

Charles Richard Hart, Hitchin, Hertfordshire; Eric Nield, Watton-at-Stone, Hertfordshire, and John Brewster Rose, Letchworth, Hertforshire, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed June 10, 1971, Ser. No. 151,917
Claims priority, application Great Britain, June 11, 1970, 28,356/70
Int. Cl. C08g *23/10*
U.S. Cl. 260—30.8 R 6 Claims

A thermoplastic composition is provided comprising (a) 90 to 99.99 percent by weight of at least one aromatic polysulphone consisting essentially of repeating units having the formulas I, II or III, either alone or in combination with each other and/or with up to 80 percent of units having the formula IV



and (b) 10 to 0.01 percent by weight of diphenyl sulphone.

3,718,621
SOLID STATE POLYMERIZATION PROCESS

Warren K. Wilson, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Sept. 17, 1969, Ser. No. 858,876
Int. Cl. C08g *17/01*
U.S. Cl. 260—75 M 2 Claims

The invention is a process for carrying out the polymerization of polyethylene terephthalate polymer in solid state at a temperature above the normal melting point of the polymer in which the polymer is heated at a temperature in the range of from about 1 to about 10° C. below its melting point and as the melting point of the polymer increases raising the temperature to maintain it within the range of from about 1 to about 10° C. below the increased melting point.

3,718,622
GEL PREVENTION IN POLYURETHANES

Louis T. Camilleri, North Bellmore, and Manfred H. Huebner, Lindenhurst, both of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,282
Int. Cl. C08g *22/16, 41/04*
U.S. Cl. 260—75 NP 9 Claims

The formation of gel particles in bulk polymerized thermoplastic polyurethanes is greatly reduced by employing a high molecular weight monofunctional compound having a hydroxyl group in the reaction mixture of an organic compound containing groups reactive with isocyanato groups and an organic polyisocyanate. The polyurethanes can be employed in applications such as the preparation of films, sheets, pipe, and coatings, either alone or in blends with other plastics such as polyvinylchloride, and the like.

3,718,623
HEAT-CURABLE POLYURETHANE FOAMS AND ELASTOMERS BASED ON AROMATIC POLYESTERS

Friedrich Lohse, Allschwil; Rolf Schmid, Reinach/Bl, and Hans Batzer, Arlesheim, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed March 1, 1971, Ser. No. 120,055
Claims priority, application Switzerland, March 5, 1970, 3274/70
Int. Cl. C08g *22/12, 22/24, 22/44*
U.S. Cl. 260—75 NP 15 Claims

Heat-curable plasticized mixtures for the manufacture of moulding materials based on polyurethanes, containing (a) a polyisocyanate, for example 3,5,5-trimethyl-3-(isocyanatomethyl)-cyclohexane-isocyanate-(1) ["isophoronediisocyanate"], (b) a long-chain polyester processing terminal hydroxyl groups (for example a polyester of 4 mols of sebacic acid and 4.5 mols of 1,6-hexanediol) and (c) a defined aromatic polycarboxylic acid hydroxyester containing at least one secondary hydroxyl group (for example a hydroxyester manufactured by reacting 1 mol of trimellitic anhydride and 1 mol of 1,2-propanediol in a first stage, and further reaction with 2 mols of a monoepoxide), with the mixture containing, per 1 equivalent of isocyanate group, 0.05 to 0.3 hydroxyl equivalents of the polyester (b) and 0.3 to 1.0 hydroxyl equivalents of the aromatic polycarboxylic acid hydroxyester (c). The mouldings obtained by hot curing of the moulding compositions are flexible, tough and impact-resistant, and these mechanical properties are largely independent of temperature; a transition to the soft rubbery-elastic state only occurs above 150° C.

3,718,624

METHOD OF CURING POLYURETHANE PREPOLYMERS WITH LIQUID EXTENDER COMPRISING 4,4'-METHYLENEBIS (2-CHLOROANILINE) AND LOW MOLECULAR WEIGHT POLYTETRAMETHYLENE ETHER GLYCOL

Norman E. Rustad, Barrington, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Aug. 27, 1971, Ser. No. 175,700
Int. Cl. C08q 22/14
U.S. Cl. 260—77.5 AM 4 Claims

This invention relates to the curing of isocyanate terminated polyurethane prepolymers with a liquid extender consisting of 4,4'-methylenebis(2-chloroaniline) and low molecular weight polytetramethylene ether glycol.

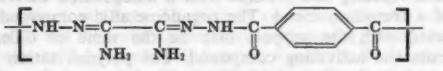
3,718,625

PRODUCTION OF A POLYACYLOXALAMIDRAZONE

Michael Wallrabenstein, Worth; Albert Schopf, Hering, and Dieter Frank, Elsenfeld, all of Germany, assignors to Glanzstoff AG, Wuppertal Germany

Filed Oct. 5, 1970, Ser. No. 78,301
Int. Cl. C08g 20/20, 20/22
U.S. Cl. 260—78 TF 11 Claims

Production of polyacyloxalamidrazones, especially a very high molecular weight polyterephthaloyloxalamidrazone having recurring units of the formula



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by an interfacial polycondensation of oxalic acid bisamidrazone with an acyl dihalide monomer such as terephthalic acid dichloride at temperatures of 0°C. to 60°C. in a two-phase solvent system consisting essentially of water and a water-immiscible, inert organic solvent, in the presence of an acid acceptor and in the presence of a substantial amount of a neutral alkali metal salt. High molecular weight polymer films or filaments can be formed from an alkaline solution of the polymer.

3,718,626

POLYESTERS DERIVED FROM 5-PENTANOLIDES

Katsumi Hayashi, Mentor, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 88,164, Nov. 9, 1970. This application Feb. 22, 1971, Ser. No. 117,729
Int. Cl. C08g 17/017
U.S. Cl. 260—78.3 1 Claim

Polyesters are prepared by the condensation of 5-pentanolides (delta-valerolactones) in the presence of an alkaline reagent. These polyesters may be extended with polyisocyanates.

3,718,627

CF_2=$CFCF_2CF_2SO_2F$ AND DERIVATIVES AND POLYMERS THEREOF

Walter Gustav Grot, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 595,332, Nov. 18, 1966, abandoned. This application Nov. 26, 1968, Ser. No. 779,273
Int. Cl. C07c 143/68, 143/70; C08f 15/02
U.S. Cl. 260—79.3 MU 5 Claims

The compound CF_2=$CFCF_2CF_2SO_2F$ and derivatives thereof are prepared and polymerized to polymers, including copolymers such as with tetrafluoroethylene, which are useful as ion exchange resins.

3,718,628

VULCANIZATION OF ETHYLENE-PROPYLENE-DIENE TERPOLYMERS

Jackson S. Boyer, Wilmington, Del., and Richard D. Cassar, West Chester, Pa., assignors to Sun Oil Company, Philadelphia, Pa.

Filed June 23, 1970, Ser. No. 49,177
Int. Cl. C08f 27/07; C08d 9/00
U.S. Cl. 260—79.5 B 14 Claims

Ethylene-propylene-diene terpolymer elastomer compositions having improved vulcanization properties containing auxiliary vulcanization accelerators selected from mono and dihydrazide derivatives of monobasic and dibasic organic acids containing C_2 to C_{40} carbon atoms and having alkyl, aryl, alkenyl and cyclic structures.

3,718,629

OXIDATION OF AROMATIC HYDROCARBONS TO PHENOLS WITH OXYGEN

Richard F. Heck, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed May 22, 1968, Ser. No. 731,276
Int. Cl. C07c 37/00
U.S. Cl. 260—621 G 3 Claims

An aromatic hydrocarbon having 6 to 18 carbons is oxidized to a phenol of the same number of carbons by contacting with oxygen, cuprous acetate, and acetic acid at 0° to 150° C.

3,718,630

STABILIZATION OF POLYOXYMETHYLENE

Glen Frederick Leverett, Vienna, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 4, 1970, Ser. No. 34,517
Int. Cl. C08g 1/24
U.S. Cl. 260—67 FP 9 Claims

A process for stabilizing polyoxymethylene prepared using an onium salt, e.g.: a quaternary ammonium compound, as a polymerization catalyst which consists of contacting the polymer with a minor amount of a carboxylic acid having a normal boiling point of 150°C. or less e.g.: formic acid and acetic acid, preferably at a temperature in the range 90°–165° C. The acid is carried by inert gas such as nitrogen and the acid is present in inert gas at a concentration 0.0005–0.5 mole percent.

3,718,631

4-VINYL PYRIDINE POLYMERS OF IMPROVED PROPERTIES FOR PURIFICATION OF POLYMERS CONTAINING ZIEGLER-NATA CATALYST RESIDUES

Jacques Grosmangin and Jean Peyrot, Le Havre, France, assignors to Compagnie Francaise de Raffinage, Paris, France

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,102
Claims priority, application France, Nov. 15, 1969, 6939352
Int. Cl. C08f 5/00
U.S. Cl. 260—80.72 13 Claims

A 4-vinyl pyridine copolymer or terpolymer useful in the purification of polymers prepared by ionic polymerization, e.g. with Ziegler-Nata catalysts; the copolymers and terpolymers of said 4-vinyl pyridine are prepared by copolymerizing 4-vinyl pyridine with divinyl benzene, and styrene for the terpolymer, in a specific ratio of monomers to solvent to obtain a copolymer or terpolymer with a defined and improved accessibility of the nitrogen atom to the impurities in the polymers sought to be purified; included within the invention are the method for preparing and the method for utilizing said copolymers and terpolymers of said 4-vinyl pyridine.

3,718,632

CONTINUOUS PROCESS FOR THE PRODUCTION OF ETHYLENE COPOLYMERS

Irwin J. Gardner, Fanwood, and Charles Cozewith, Westfield, N.J., assignors to Esso Research and Engineering Company

Filed Oct. 19, 1970, Ser. No. 81,895
Int. Cl. C08f 15/40
U.S. Cl. 260—80.78 11 Claims

Process for the continuous production of elastomeric copolymers of ethylene and one or more higher alpha-olefins having 3 to 8 carbon atoms, preferably propylene; and terpolymers of ethylene, an alpha-olefin of 3 to 8 carbon atoms and a nonconjugated acyclic or alicyclic diolefin comprises a multi-staged reactor system to which solvent, monomers, and a Ziegler-Natta catalyst composition consisting of a transition metal catalyst and an organoaluminum cocatalyst are fed to a first stage wherein polymerization occurs and from which a polymer cement is fed to subsequent stages to which are fed the same or different monomers, organoaluminum cocatalysts and a catalyst reactivator. By means of the multistaged reactor system, higher rates and conversions of alpha-olefin are achieved, yield of polymer based on the transition metal catalyst is increased by several fold and polymers having a broad range of molecular weights are produced.

3,718,633

HYDROXY-TERMINATED COPOLYMERS OF BUTADIENE AND FERROCENE DERIVATIVES

Mart G. Baldwin, Newtown, Pa., and Samuel F. Reed, Jr., Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army

Filed Nov. 25, 1969, Ser. No. 886,601
Int. Cl. C08d 1/34, 3/06
U.S. Cl. 260—82.1 2 Claims

The copolymers of vinyl ferrocene (VF) and butadiene are disclosed along with preparative procedures therefor. The copolymers are produced in an organic solvent when polymerization is initiated by an azo type initiator selected from the initiators consisting of azo-bis-(2-methyl-hydroxy-valeronitrile), azo-bis-(hydroxyethyl-2-methyl proprionate), and azo-bis-(2-methyl-3-hydroxy proprionitrile). The copolymers serve as a binder for solid propellant compositions and also serve to increase the burning rate of solid propellants wherein used.

3,718,634

POLYMERIZATION OF ALKYL VINYL ETHERS WITH CATALYST BASED ON DIALKYL ALUMINUM HALIDE AND WATER

Herman S. Schultz, Easton, Pa., assignor to GAF Corporation

Filed May 17, 1967, Ser. No. 639,015
Int. Cl. C08f 3/38
U.S. Cl. 260—91.1 M 11 Claims

High molecular weight amorphous, or only slightly crystalline, polymers of improved characteristics are obtained by polymerization of alkyl vinyl ethers using an improved catalyst system comprising the reaction product of a dialkyl aluminum halide and co-catalytic amount of water.

3,718,635

PROCESS FOR POLYMERIZATION OF OLEFINS AND CATALYST COMPOSITION THEREFOR

Toru Tomoshige, Iwakuni, and Shiro Honma, Otake, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Dec. 14, 1970, Ser. No. 98,197
Claims priority, application Japan, Dec. 16, 1969, 44/100605
Int. Cl. C08f 1/56, 3/10
U.S. Cl. 260—93.7 8 Claims

A process for polymerizing α-olefins in the presence of a Ziegler catalyst, such catalyst comprising (i) a pulverulent catalyst component obtained by mechanically or physically copulverizing a halogen compound of low valency titanium obtained by reducing titanium tetrahalide with a member selected from the group consisting of hydrogen, metallic aluminum and metallic titanium, an oxide selected from the group consisting of (a) an oxide selected from the group consisting of MgO, Al_2O_3 and SiO_2 and (b) a compound oxide containing at least two elements selected from the group consisting of Mg, Al and Si, in an inert atmosphere in the solid phase until the average particle size of the pulverized product reaches 5 microns or less; and (ii) an organoaluminum or organozinc compound.

3,718,636

CATALYSTS AND PROCESS FOR THE POLYMERIZATION OF OLEFINS

Jacques Stevens, Braine-l'Alleud, and Michel George, Brussels, Belgium, assignors to Solvay & Cie, Brussels, Belgium

No Drawing. Filed Jan. 22, 1970, Ser. No. 5,128
Claims priority, application France, Jan. 24, 1969, 6901486
Int. Cl. C08f 1/56, 3/06
U.S. Cl. 260—94.9 D 15 Claims

Catalysts for the low pressure polymerization and copolymerization of olefins are provided which comprise an activator which is an organometallic compound and a solid product obtained by reacting a support comprised of a solid bivalent metal compound with an organometallic compound, separating the resulting solid product, and then reacting this product with a halogenated derivative of a transition metal. The organometallic compound reacted with the support may be the same or different from the activating compound. The polymerization and copolymerization of olefins is carried out using these catalysts.

3,718,637

PROCESS FOR THE POLYMERIZATION OF CONJUGATED DIENES

Adel F. Halasa, 5040 Everett Road, P.O. Box 244, Bath, Ohio 44210

No Drawing. Continuation-in-part of application Ser. No. 854,268, Aug. 29, 1969. This application Mar. 25, 1971, Ser. No. 128,155
Int. Cl. C08d 3/04, 3/06, 1/20
U.S. Cl. 260—94.2 T 15 Claims

Conjugated dienes are polymerized by a new catalyst system which permits control of the molecular weight and gives a more easily processed product, together with an increased proportion of 1,2- configuration in the polymer repeating unit structure. This catalyst system comprises (1) a sodium allyl compound having 3–10 carbon atoms and (2) a lithium alkyl, a lithium aryl or a lithium ferrocenyl, cobaltcenyl or nickelcenyl compound. The diene polymers produced by this process have controllable molecular weights in the range of 5,000 to 1,000,000, preferably 100,000 to 500,000, broad molecular weight distribution, glass transition temperatures higher than normally obtained, high degree of branching, high proportion of 1,2- repeating unit configuration, and are more easily processed in the production of rubber and other compositions for commercial use.

3,718,638

PROCESS FOR THE POLYMERIZATION OF CONJUGATED DIENES

Tai Chun Cheng, Mogadore, and Adel F. Halasa, Bath, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of application Ser. No. 854,309, Aug. 29, 1969. This application June 7, 1971, Ser. No. 150,735
Int. Cl. C08d 1/20, 3/04, 3/06
U.S. Cl. 260—94.2 T 17 Claims

Conjugated dienes are polymerized by a new catalyst system which permits control of the molecular weight and

gives a more easily processed product, together with an increased proportion of 1,2 configuration in the polymer repeating unit structure. This catalyst system comprises (1) a sodium allyl compound having 3–10 carbon atoms, (2) a sodium alkoxide or aryloxide of 1–10 carbon atoms, and (3) a potassium t-alkoxide of 4–10 carbon atoms. The diene polymers produced by this process have controllable molecular weights in the range of 5,000 to 1,000,000, preferably 100,000 to 500,000, broad molecular weight distribution, glass transition temperatures higher than normally obtained, high degree of branching, high proportion of 1,2 repeating unit configuration, and are more easily processed in the production of rubber and other compositions for commercial use.

3,718,639

PROCESS FOR PRODUCING CATIONIC LIGNIN AMINES

Sten I. Falkehag, Mount Pleasant, and Peter Dilling, Charleston, both of S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed April 26, 1971, Ser. No. 137,574
Int. Cl. C07g 1/00
U.S. Cl. 260—124 A 4 Claims

The process of this invention involves reacting a lignin with the reaction product of epichlorohydrin and a tertiary amine, preferably in salt form. The tertiary amine is preferably converted to salt form with hydrochloric acid and the pH adjusted to between 7–11, preferably between 9 and 9.5. The tertiary amine salt is reacted with epichlorohydrin for about 1 to 6 hours at a temperature below 90° C., preferably below 55°C. The pH of the reaction is slowly raised to around 11 while allowing the reaction to go to completion. From 2 to 10 moles (per 1,000 grams of lignin) of the tertiary amine-epichlorohydrin intermediate are reacted with lignin at a temperature below 90° C., preferably 50° C. for from 1 to 24 hours to forms cationic lignin amines that are water-soluble.

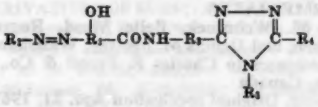
3,718,640

TRIAZOLE AZO PIGMENTS

Armand Roueche, Bottmingen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed April 22, 1970, Ser. No. 30,980
Claims priority, application Switzerland, May 7, 1969, 7010/69
Int. Cl. C09b 29/36, 33/12, 43/14
U.S. Cl. 260—157 8 Claims

Azo pigments of the formula



wherein R_1 denotes an aromatic radical, R_4 denotes a cyclic radical of aromatic character, R_2 denotes a naphthalene radical in which the azo, hydroxyl and —CO group are in the 1,2,3-position, R_3 denotes an arylene radical and R_5 denotes an alkyl or aryl group or a hydrogen atom, are useful for coloring plastics and lacquers in orange ro red shades of excellent fastness properties.

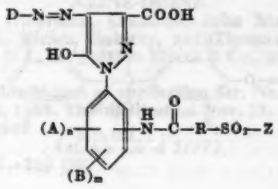
3,718,641

REACTIVE ARYLAZO-PYRAZOLONE DYESTUFFS

Rolf Muller, Frankfurt am Main; Hanswilli von Brachel, Offenbach am Main; Rudolf Klein, Frankfurt am Main-Fechenheim; Ewald Schmidt, Bischofsheim, and Heinz Bender, Bergen-Enkheim, all of Germany, assignors to Cassella Farbwerke Mainkur AG, Frankfurt, Germany

Filed May 4, 1970, Ser. No. 34,604
Claims priority, application Germany, May 6, 1969, P 19 22 940.4
Int. Cl. C09b 62/70, 62/82
U.S. Cl. 260—162 7 Claims

Dyestuff of the formula



wherein D is the residue of a diazo component; A, B and Z are substituent moieties; *m* and *n* are integers and R is a hydrocarbon bridging member as well as the copper, cobalt and chromium metal complexes thereof, which are useful for dyeing wool, polyamide, silk or cellulose fibers in good dye yields having highly brilliant greenish to reddish yellow shados possessing good fastness properties.

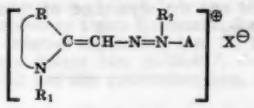
3,718,642

PROCESS FOR THE QUATERNIZATION OF BASIC DYESTUFFS

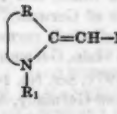
Klaus-Friedrich Lehment, Union, N.J., and Roderich Raue, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 25, 1969, Ser. No. 836,635
Claims priority, application Germany, July 3, 1968, P 17 70 782.3
Int. Cl. C09b 43/00; D06p 3/76
U.S. Cl. 260—165 5 Claims

Process for the production of basic dyestuffs of the formula



by quaternizing dye bases of the formula



in the presence of alkaline agents wherein the improvement comprises adding as alkaline agents tertiary amines which are space occupying substituted on the nitrogen atom. In the formulas given R represents the residual constituent of a 5- or 6-membered heterocyclic ring; R_1 and R_2 are alkyl, cycloalkyl or aralkyl and R_1 can additionally be aryl; A is an aromatic or heterocyclic radical and X is an anion. The compounds are used as basic dyestuffs.

3,718,643
DERIVATIVES OF BIS(-HYDROXYARYL)ALKANOIC ACIDS

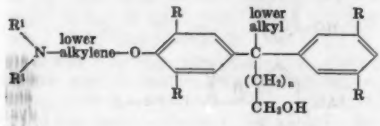
Josef Fried, Chicago, Ill.; Edward J. Pribyl, Metuchen, N.J., and John Krapcho, Somerset, both of N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

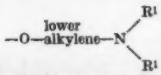
Continuation-in-part of Ser. No. 793,612, Jan. 23, 1969, abandoned, which is a continuation-in-part of Ser. No. 566,245, July 19, 1966, abandoned, which is a continuation-in-part of Ser. No. 288,630, June 18, 1963, abandoned. This application Sept. 30, 1970, Ser. No. 77,036

Int. Cl. C07d *87/28, 93/10, 27/04*

U.S. Cl. 260—243 B 7 Claims

This application relates to alcohols of the general formula





and to acid addition salts thereof. These substances inhibit cholesterol biosynthesis and aid in the regulation of cholesterol in the blood.

3,718,644
ANTIBIOTIC SEPARATION AND PURIFICATION

Roy G. Weston, Matawan, and Irving Putter, Martinsville, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed June 30, 1970, Ser. No. 51,320

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C 16 Claims

A method for the recovery and purification of an antibiotic mixture comprising 7β-(D-5-amino-5-carboxyvaleramido) - 3 - (α-methoxy-p-sulfooxycinnamoyloxymethyl)-7-methoxy-3-cephem-4-carboxylic acid and the p-hydroxy analog thereof and the separation of those components from each other.

3,718,645
1,5-BENZODIAZEPINES AND PROCESS FOR PREPARING THEM

Heinz Kuch, Frankfurt am Main, and Irmgard Hoffmann, Bad Soden, Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister, Lucius & Bruning, Frankfurt am Main, Germany

Filed May 6, 1971, Ser. No. 140,978

Claims priority, application Germany, April 15, 1970, P 21 18 262.7

Int. Cl. C07d *53/04*

U.S. Cl. 260—239.3 B 3 Claims

Dialkylphosphinylalkyiene-substituted 1,5-benzodiazepines useful as medicaments in the treatment of psychic diseases are obtainable by reacting the corresponding benzodiazepines with a dialkyl-phosphinylalkyl halide or by reacting a 2-dialkyl-phosphinylalkylaminodiphenylamine with a malonic acid dihalide or alkylmalonic acid dihalide.

3,718,646
N-LOWER ALKENYL-2,3-DIHYDRO-2-OXO-5-PHENYL-1H-1,4-BENZODIAZEPINE-1-CARBOXAMIDES

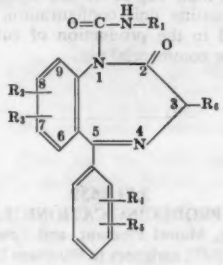
Robert B. Moffett, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 5, 1970, Ser. No. 78,167

Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 D 7 Claims

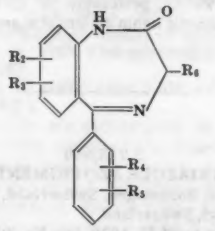
A 2,3-dihydro-2-oxo-5-phenyl-1H-1,4-benzodiazepin-1-carboxamide of the formula:



II

thereof,

wherein R_1 is alkenyl of three to eight carbon atoms, inclusive, cycloalkyl of three to six carbon atoms, inclusive, and haloalkyl, in which the alkyl group is of two to six carbon atoms, inclusive and the halogen is fluorine, chlorine, bromine, or iodine; wherein R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, alkyl of one to three carbon atoms, inclusive, fluorine, chlorine, bromine, cyano and trifluoromethyl, and wherein R_6 is hydrogen or alkyl of one to three carbon atoms, inclusive, and the pharmacologically acceptable acid addition salts thereof, are prepared by reacting a compound of the structure



I

wherein R_2, R_3, R_4, R_5, and R_6 have the values of above, with an alkenyl, cycloalyl, or haloalkyl isocyanate. The products of formula II are useful as tranquilizers and sedatives.

3,718,647
PROCESS FOR MAKING 1,2,5-THIADIAZOLES IN THE SINISTER CONFIGURATION AND NOVEL INTERMEDIATES

Leonard M. Weinstock, Belle Mead, Roger J. Tull, Metuchen, and Dennis M. Mulvey, Whitehouse Station, N.J., assignors to Charles E. Frosst & Co., Kirkland, Quebec, Canada

No Drawing. Original application Apr. 21, 1969, Ser. No. 818,474. Divided and this application Aug. 16, 1971, Ser. No. 172,234

Int. Cl. C07d *87/46*

U.S. Cl. 260—247.1 4 Claims

Preparation of S-3-X-4-(3-substituted amino-2-hydroxypropoxy)-1,2,5-thiadiazole beta adrenergic blocking agents using as starting material an optically active alkamine in the sinister configuration, or a derivative of said alkamine, which is reacted with an 3-X-4-chloro(or RO— where R is hydrogen or an alkali metal)-1,2,5-

thiadiazole. Novel 3-morpholino-4-chloro(or RO—)-1,2,5-thiadiazoles and novel alkamines and their preparation also are described.

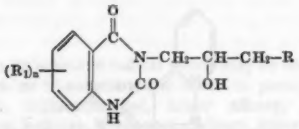
3,718,648

BASICALLY SUBSTITUTED 2,4-(1H,3H)-QUINAZOLINDIONE DERIVATIVES

Rudi Beyerle, Bruchkobel, and Adolf Stachel, deceased, late of Frankfurt am Main-Fechenheim, by Inge Stachel, Frankfurt am Main-Fechenheim, and Sophie Stachel, Augsburg, Germany, heirs, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main-Fechenheim, Germany

No Drawing. Filed June 25, 1970, Ser. No. 49,932
Claims priority, application Germany, July 4, 1969, P 19 34 037.5
Int. Cl. C07d *87/50*
U.S. Cl. 260—247.2 A **6 Claims**

Pharmacologically valuable, basically substituted 2,4-(1H,3H)-quinazolindione derivatives having the formula



wherein R stands for the radical selected from the group consisting of di-C_1-C_4-alkylamine, N-methyl-benzylamine, N-methyl-N-cyclohexylamino, N-methyl-allylamino, N-methyl piperazino, N - methyl-N-(piperidino-n-propyl)-amino, N-methyl-N-(methoxy-n-propyl)-amino, hexamethylene-imino, morpholino, thio-morpholino, pyrrolidino and piperidino, said radical being bound via a nitrogen atom; R_1 stands for alkoxy groups having 1 to 4 carbon atoms, which are preferably in the 6,7 or 6,7,8-position; and *n* stands for the integers 2 or 3.

3,718,649

PROCESS FOR THIOURACIL PRODUCTION

Gerald T. Dyer, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 740,105, June 26, 1968, abandoned. This application Oct. 5, 1970, Ser. No. 78,232
Int. Cl. C07d *51/32*
U.S. Cl. 260—251 R **8 Claims**

Novel method for preparing 4-hydroxy pyrimidine and 2-substituted analogues thereof such as thiouracil. Essentially the method involves the reaction of an ester of acetic acid with an ester of formic acid and an alkali metal alcoholate in the presence of an inert nitrogen atmosphere. The reaction mixture produced by the foregoing contains the corresponding alkali metal formylacetic ester which is reacted with thiourea to produce thiouracil.

3,718,650

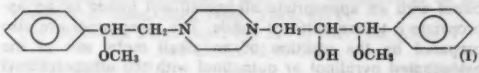
NEW DERIVATIVES OF SUBSTITUTED PIPERAZINES

Roland Yves Mauvernay, Riom; Norbert Busch, Puy de Dome; Jacques Moleyre, Menetrol, and Jacques Simond, Chamalieres, all of France, assignors to Societe Anonyme Centre Europeen De Recherches Mauvernay, Riom, France

Filed Feb. 23, 1971, Ser. No. 118,077
Claims priority, application France, March 2, 1970, 7007383
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 R **2 Claims**

A process for obtaining substituted piperazine derivatives, notably an amino-alcohol derivative for therapeutic use, is described.

At least one epoxide, particularly 3-phenyl, 3-methoxy, 1,2-propylene oxide is reacted on a substituted piperazine, particularly 1-(2-phenyl, 2-methoxy)ethyl piperazine. The invention notably relates to a new amino-alcohol formula (I).



as well as the addition salts thereof with organic or inorganic acids which are pharmaceutically acceptable.

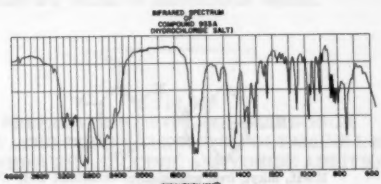
The application of the compound of formula (I) in medicines having antitussive, mucolytic and eupneic actions.

3,718,651

3,6-BIS (5-CHLORO-2-PIPERIDINYL)-2,5-PIPERAZINE-DIONE

Charles O. Gitterman, Cranford, John Madas, Clark, Edward L. Rickes, Rahway, and Thomas H. Stoudt, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of application Ser. No. 834,534, June 18, 1969. This application Nov. 23, 1970, Ser. No. 91,644
Int. Cl. C07d *51/72*
U.S. Cl. 260—268 DK **4 Claims**



3,6-bis(5 - chloro-2-piperidinyl) - 2,5 - piperazinedione, also known as Compound 593A, is obtained by fermentation of a heretofore unknown species of *Streptomyces griseoluteus*. Compound 593A has demonstrated activity in inhibiting the growth of tumors in mammals and birds, and in inhibiting the growth of certain microorganisms.

3,718,652

NAPHTHOYLENE-BENZIMIDAZOLIUM DYESTUFFS

Robert Frederick Michel Sureau, Enghien-les-Bains, and Marie-Josephe Jeanne Alicot, Soisy-sous-Montmorency, France, assignors to Ugine Kuhlmann, Paris, France

No Drawing. Original application Jan. 17, 1967, Ser. No. 609,757, now Patent No. 3,586,677, dated June 22, 1971. Divided and this application Aug. 27, 1970, Ser. No. 67,572
Claims priority, application France, Jan. 24, 1966, 46,932
Int. Cl. C07d *35/10*
U.S. Cl. 260—282 **5 Claims**

Cationic dyestuffs derived from naphthoylene-benzimidazolium compounds.

3,718,653

QUINOYL ALKANESULFONATES AND TOLUENESULFONATES

Martin Hamer, Skokie, Ill., assignor to International Minerals & Chemical Corporation

Continuation-in-part of Ser. No. 645,898, June 14, 1967, Pat. No. 3,535,324. This application Feb. 26, 1970, Ser. No. 14,641
Int. Cl. C07d *33/60*
U.S. Cl. 260—283 S **9 Claims**

Novel compounds of the classes of halopyridyl or haloquinolyl alkanesulfonates, including haloalkanesulfonates, and

halopyridyl or haloquinolylα-toluenesulfonates, are useful as agricultural toxicant compositions. The compounds are prepared by the reaction, in the presence of a hydrogen halide acceptor, of an appropriate halogenated pyridinol or quinolinol with an appropriate alkanesulfonyl halide or an appropriate α-toluenesulfonyl halide. The compounds are also prepared by the reaction of an alkali metal salt of the halogenated pyridinol or quinolinol with the alkanesulfonyl halide or the α-toluenesulfonyl halide.

3,718,654

ANILINO-3-PYRIDINESULFONIC ACIDS

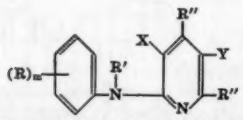
Renat Herbert Mizzoni, Long Valley R. D., and Herbert Morton Blatter, Summit, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 24,869, April 1, 1970, Pat. No. 3,671,512. This application Nov. 12, 1970, Ser. No. 89,021

Int. Cl. C07d 31/48

U.S. Cl. 260—294.8 R 4 Claims

New ortho-anilino-3-pyridinesulfonic acids, e.g., those of the formula



R=H, alkyl, free, esterified or etherified OH, CF_3, NO_2, amino, free or functionally converted carboxy or sulfo
R′=H, alkyl or acyl
R″=H or alkyl, m=1-3
one of X and Y=H or alkyl, other is SO_3H

the N-oxide and functional derivatives thereof, are diuretic and antiinflammatory agents.

3,718,655

CERTAIN DIISONIAZID METHANE SULFONATE COMPLEXES

Carlos Ferrer-Salat; Jorge Ferrer-Batlles, and Juan Colome-Riera, all of Barcelona, Spain, assignors to Laboratories Ferrer S.L., Barcelona, Spain

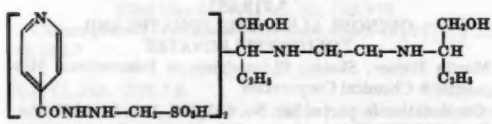
Filed July 28, 1970, Ser. No. 59,010

Claims priority, application Spain, July 28, 1969, 369,952

Int. Cl. C07d 31/48

U.S. Cl. 260—294.8 H 2 Claims

Di-isoniazidmethane sulfonate of d(+)2,2′(ethylenediimino)di-1-butanol having the formula



constituting an improved tuberculostatic agent and method of preparing the same by reacting d(+)2,2′(ethylenediimino) di-1-butanol and isoniazid methane sulfonic acid.

3,718,656

PYRAZOLO(1.5-A) PYRIDINE DERIVATIVES

Toshihiko Okamoto, Bunkyo-ku, Tokyo; Masaaki Hirobe, Setagaya-ku, Tokyo; Seigo Suzue, Itabashi-ku, Tokyo; Yoshio Nagatsu, Urawa-shi, Saitama-ken; Kelichi Ushiyama, Minamisaitama-gun, Saitama-ken; Susumu Satoh, Kita-ku, Tokyo, and Tsutomu Irikura, Nerima-ku, Tokyo, all of Japan, assignors to Kyorin Seigaku Kabushiki Kaisha, Tokyo, Japan

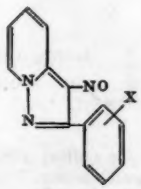
Filed April 8, 1971, Ser. No. 132,558

Claims priority, application Japan, Sept. 25, 1970, 45/83985

Int. Cl. C07d 31/34, 31/42

U.S. Cl. 260—295 F 9 Claims

The present invention provides 2-substituted-3-nitrosopyrazolo[1,5-a]pyridines expressed by the general formula,



(I)

where X stands for a halogen atom, a lower alkoxy, hydroxy or acetoxy group, and a method for synthesizing the same. The substances of this invention expressed by the general formula (I) exhibit excellent antimicrobial action for example, the tubercle bacillus in vitro and are especially efficacious as medicine for trichomanas disease and supparative inflammation.

3,718,657

CERTAIN-2-SUBSTITUTED-1,2,3,4-TETRAHYDRO-BETA OR GAMMA CARBOLINES

David Lyon Garmaise, Montreal; Gerard Yvon Paris, Duvernay, Quebec, both of Canada, and Nicholas Peter Plotnikoff, Lake Bluff, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 3, 1970, Ser. No. 94,984

Int. Cl. C07d 31/42

U.S. Cl. 260—296 A 6 Claims

A new series of closely related compounds, the β- and Δ-carbolines carrying on the piperidino-nitrogen an unsaturated hydrocarbon side chain with three carbon atoms, was found to possess valuable anti-depressant activity with an unusually high therapeutic index.

3,718,658

COMPOUND FOR RETARDING COMBUSTION OF POLYCARBONAMIDES

John C. Summers, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 10, 1970, Ser. No. 54,017

Int. Cl. C07c 143/63

U.S. Cl. 260—501.12 2 Claims

Sulfanilate salts of guanidine and guanylurea, useful as flame-retardants for synthetic polymeric resins. Incorporation of such salts into, for example, polycarbonamides, produces a self-extinguishing flame-resistant composition.

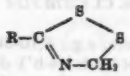
3,718,659

5-ARYL-3H-1,2,4-DITHIAZOLES AND PROCESS FOR THEIR MANUFACTURE

Horst Bohme, and Kurt-Henning Ahrens, both of Frankfurt/Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Sept. 1, 1970, Ser. No. 68,776
Claims priority, application Germany, Sept. 11, 1970, P 19 45 968.8
Int. Cl. C07d 91/70
U.S. Cl. 260—302 R 9 Claims

5-Aryl-3H-1,2,4-dithiazoles of the formula I



in which R is an aromatic radical which may be unsubstituted or mono-, di- or tri-substituted in meta- or para-position by lower alkyl, trifluoromethyl, lower alkoxy, benzyloxy, halogen, nitro, hydroxy, lower acyl, carboxy, lower carbalkoxy or carbobenzoxy, and their physiologically tolerable salts, active against fungi. A process for preparing these compounds.

3,718,660

ARYLSULPHONYL UREAS CONTAINING HETEROCYCLIC ACYLAMINO GROUPS

Hans Plumpe, and Walter Puls, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 28, 1968, Ser. No. 771,318
Claims priority, application Germany, Nov. 2, 1967, P 16 70 945.8
Int. Cl. C07d 85/22
U.S. Cl. 260—307 D 23 Claims

Blood sugar lowering compounds useful as oral antidiabetics are provided. The compounds have low toxicity and are well tolerated. They are arylsulphonyl ureas having heterocyclic acylamino groups such as N-[4-(β-[3-methylisoxazolyl-(5)-carboxamido]-ethyl)-benzene-sulphonyl]-N′-cyclohexyl-urea and its congeners and analogs administrable in tablets or capsules containing for example 1 mg of active agent. The compounds can be prepared in several ways such as by reacting an appropriate amine or amine salt with a heterocyclic acylamino group-containing arylsulphonamide derivative or corresponding arylsulphonylisocyanate. The substituents on the benzene ring are preferably para to one another but may be in the ortho and meta positions to each other. The reactions can be carried out with or without a solvent or diluent and are exothermic or heated at elevated temperature.

3,718,661

PHOSPHORIC ESTERS

Wolfram Dietsche, 58 Moltkestrasse, 6701 Altrip; Heinrich Adolphi, 11 Kalmitweg, 6703 Limburgerhof; Peter Beutel, 27 Strahlenburgstrasse, 6800 Mannheim, and Karl-Heinz Koenig, 8a Pierstrasse, 6710 Frankenthal, all of Germany

Filed Sept. 25, 1970, Ser. No. 75,704
Int. Cl. A01n 9/36; C07f 9/16
U.S. Cl. 260—308 C 5 Claims

New and valuable substituted O,O-dialkylthionophosphoric esters having a good insecticidal action and a process for controlling insects with these compounds.

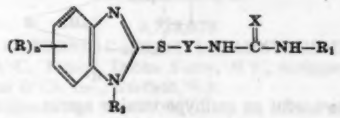
3,718,662

MERCAPTOBENZIMIDAZOLYL UREAS AND THIOUREAS

Venkatachala L. Narayanan, Hightstown, and Rudiger D. Haugwitz, Highland Park, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Apr. 21, 1971, Ser. No. 136,197
Int. Cl. C07d 49/38
U.S. Cl. 260—309.2 6 Claims

Mercaptobenzimidazolyl ureas and thioureas are provided having the structure



and which are useful as anthelmintic agents.

3,718,663

PREPARATION OF OIL-SOLUBLE BORON DERIVATIVES OF AN ALKYLENE POLYAMINE-UREA OR THIOUREA-SUCCINIC ANHYDRIDE ADDITION PRODUCT

Edmund J. Piasek, Chicago; Robert E. Karll, Batavia, and Richard J. Lee, Downers Grove, all of Ill., assignors to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 685,254, Nov. 24, 1967. This application Aug. 31, 1970, Ser. No. 68,470
Int. Cl. C07d 27/00
U.S. Cl. 260—326.3 4 Claims

Complex substituted alkylene polyamines such as di(alkenyl-succinimide) of N_1,N_3 symmetrical bis(aminopolyazalkylene) ureas that react with boric acid in oil solution either with low boric acid utilization efficiency or react to form a hazy product whose haze cannot be removed by filtration are readily converted to the desired oil solution of boron and nitrogen containing products by first preparing an oil solution of super boron containing product of the complex substituted alkylene polyamine, combining the oil solution of super boron containing product with oil solution of the complex substituted alkylene polyamine and equilibrating the resulting mixture to a uniform boron to nitrogen content throughout.

3,718,664

TRIS (HYDROXYMETHYL) AMINOMETHANE SALT OF THIOCTIC ACID

Carlos Ferrer Salat; Jorge Ferrer Batlles, and Juan Colome Riera, all of Barcelona, Spain, assignors to Laboratorios Ferrer, S.L., Barcelona, Spain

Division of Ser. No. 616,780, Dec. 17, 1967, Pat. No. 3,562,273. This application Sept. 3, 1970, Ser. No. 69,225
Claims priority, application Spain, Feb. 17, 1966, 323,195
Int. Cl. A61k 27/00; C07d 71/00
U.S. Cl. 260—327 A 1 Claim

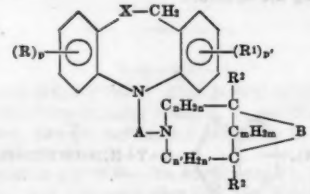
The present invention concerns new compounds of anti-acidotic action such as the derivatives of tris (hydroxymethyl) aminomethane, of important therapeutic application.

3,718,665
AZABICYCLO-(N)-ALKYLENE-5,11-DIHYDRODIBENZOXA (OR THIA) ZEPINES

Harry L. Yale, New Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Sept. 30, 1970, Ser. No. 77,035
Int. Cl. A61k *27/00*; C07d *87/54, 93/42*
U.S. Cl. 260—327 B 9 Claims

Dihydrodibenzoxa (or thia) zepines are provided having the structure



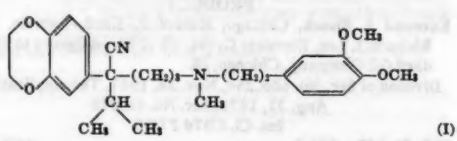
which are useful as antihypertensive agents.

3,718,666
SUBSTITUTED PHENYLACETONITRILES

Horst Zeugner, Hannover, Klaus-Wolf von Eickstedt, Hannover-Bemerode, Werner Stuhmer, Eldagsen, and Siegfried Funke, Hannover, Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

No Drawing. Filed Dec. 30, 1970, Ser. No. 102,961
Claims priority, application Germany, Jan. 7, 1970, P 20 00 435.7
Int. Cl. C07d *15/18*
U.S. Cl. 260—340.3 2 Claims

α-Isopropyl-α-[(N-methyl-N-homoveratryl)-γ - aminopropyl]-3,4-ethylenedioxy-phenylacetonitrile of the formula



(I)

and pharmaceutically acceptable acid addition compounds thereof.

The compounds have a dilatent effect on the coronary vessels and improve the contractility of the cardiac muscle. They are therefore suited for treatment of heart patients suffering from coronary insufficiency.

3,718,667
2,3-DISUBSTITUTED LEVULINALDEHYDE COMPOUNDS

Donald P. Strike, Rosemont, and Herchel Smith, Bryn Mawr, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Division of application Ser. No. 876,116, Nov. 12, 1969, which is a continuation-in-part of application Ser. No. 765,020, Oct. 4, 1968, which in turn is a continuation-in-part of application Ser. No. 702,185, Feb. 1, 1968, all now abandoned. This application Apr. 15, 1971, Ser. No. 134,469
Int. Cl. C07d *7/04*; C07c *59/32*
U.S. Cl. 260—345.8 1 Claim

4,5-disubstituted-3-hydroxycyclopentanones (I) are prepared by hydrogenolyzing the corresponding 4,5-disubstituted-2,3-epoxycyclopentanone (IV) which in turn is provided by reacting the corresponding 4,5-disubstituted-2-cyclopenten-1-one (III) with alkaline hydrogen peroxide. Compounds (III) are prepared by cyclizing the corresponding 2,3-disubstituted levulinaldehyde (II) with a base. The products of the process are biologically active, especially compound (I) substituted in the 4-position with 3'-hydroxyoctyl and in the 5-position with 6'-carboxyhexyl. This compound has prostaglandin-like activity, especially blood pressure lowering and bronchodilator activity, and is a totally-synthetic dihydroprostaglandin E_1 (dihydro PGE_1). The processes of the invention may also be used to obtain compounds with prostaglandin-like activity from appropriately substituted naturally occurring cyclopentanones, e.g. those isolated from the Caribbean gorgonian, *Plexaura homomalla*.

3,718,668
BENZODIPYRONES

Hugh Cairns, Sandbach, Cheshire, and Robert Minshull, Brereton, Cheshire, both of England, assignors to Fisons Limited, Suffolk, England

Continuation-in-part of Ser. No. 751,753, Aug. 12, 1970, abandoned. This application Aug. 7, 1970, Ser. No. 62,170
Int. Cl. C07d *7/34*
U.S. Cl. 260—345.2 28 Claims

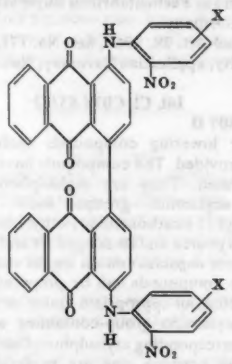
Certain benzodipyrones, e.g., 4,10-dioxo-2,8-dicarboxy-5-methoxy-4H,10H-benzo(1,2-b:3,4-b') dipyran disodium salt and many others which are disclosed, inhibit the release and/or action of toxic products which arise from the combination of certain types of antibody and specific antigen; and are useful in the treatment of conditions — such as asthma, hay fever, etc. — in which antigen reactions are responsible for said conditions.

3,718,669
4,4-BIS (2-N ITRO-X-HALO-ANILINO)-1,1 DIANTHRAQUINONYL

Herman Gerson, New York, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

Filed April 30, 1971, Ser. No. 139,189
Int. Cl. C09b *1/32*
U.S. Cl. 260—367 6 Claims

A compound of the formula



wherein X is independently fluorine, chlorine or bromine, is useful as a pigment imparting desirable red colorations to a variety of synthetic resins. These new pigments are characterized by excellent mass tone, fastness to light and to lacquer solvents.

3,718,670
PROCESS FOR THE PREPARATION OF 17-OXO-STEROIDS FROM 17a-HYDROXY-20-OXO-STEROIDS

John Peter Turnbull, London, England, assignor to Glaxo Laboratories Limited, Middlesex, England

Filed Dec. 21, 1970, Ser. No. 100,402
Int. Cl. C07c *169/22*
U.S. Cl. 260—397.3 6 Claims

Process for the preparation of 17-oxo-steroids which comprises oxidizing 17α-hydroxy-20-oxo-steroids by means of one-electron transfer oxidizing agents.

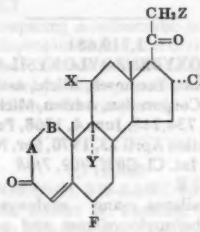
3,718,671

21-HALOGEN STEROIDS

Henry Laurent, 1 Berlin 37; Karl-Heinz Kolb, 1 Berlin 45, and Rudolf Wiechert, 1 Berlin 39, all of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Filed March 11, 1970, Ser. No. 23,117
Claims priority, application Germany, March 11, 1969, P 19 13 042.8; Jan. 29, 1970, P 20 04 767.0
Int. Cl. C07c *169/34*
U.S. Cl. 260—397.3 17 Claims

21-halogen steroids having the formula



(I)

wherein —A—B— is —CH=CH— or —CCl=CH—, Y and Z are each a halogen atom, and X is a halogen atom having the same or a lesser atomic weight than Y and in the case where —A—B—is a —CCl=CH— group, X can also be hydroxyl.

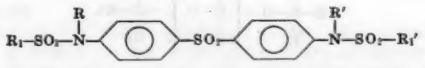
3,718,672

DISULFONAMIDES OF DIAMINO DIPHENYL SULFONES

Markus Matzner, Edison; Walter T. Reichle, Millington; Sui-Wu Chow, and James E. McGrath, both of Somerville, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed April 6, 1970, Ser. No. 26,045
Int. Cl. C07c *143/74*
U.S. Cl. 260—397.6 4 Claims

Compounds of the structure



wherein R, R′, R_1 and R_1′ are C_1 to C_{20} hydrocarbon radicals. These compounds are useful as initiators or activators in the anionic polymerization of lactam monomers.

3,718,673

PROCESS FOR THE PREPARATION OF 21-CHLORO-6,6,9ALPHA-TRIFLUORO-11BETA, ALPHA, 17ALPHA-TRIHYDROXY-1,4-PREGNADIEN-3,20-DIONE 16,17-KETALS AND SELECTED INTERMEDIATES

William Charles Ripka, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 1, 1971, Ser. No. 111,615
Int. Cl. C07c *173/00*
U.S. Cl. 260—397.3 8 Claims

6,6-Difluoro-11α,16α,17α-trihydroxy-4-pregnen-3,20-dione 16,17-ketal 17-ketal is prepared by a process involving the 11α-microbiological hydroxylation of the corresponding 16α,17α-dihyaroxy steroid. The 11α-hydroxyl is converted sequentially to the 9,11-double bond, 9,11-epoxy and 9α-fluoro-11β-hydroxyl. Optionally the 1,2-position is dehydrogenated and a 21-hydrogen converted to a 21-hydroxy, acyloxy, bromine or chlorine. The latter steroid ketals are highly active anti-inflammatory and glucocortical agents.

3,718,674

DIASTEREOMERS OF α-HYDRAZINO-β-(PHENYL)PROPIONITRILES

Sandor Karady, Elizabeth; Seemon H. Pines, Murray Hill; Manuel G. Ly, Edison, and Meyer Sletzinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed June 24, 1970, Ser. No. 49,342
Claims priority, application Canada, March 25, 1970, 78,422
Int. Cl. C07c *169/52*, *121/78*
U.S. Cl. 260—397.1 4 Claims

Diastereomers of and a method of resolving α-hydrazino-β-(substituted or unsubstituted phenyl)alkanoic acid derivatives.

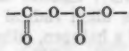
3,718,675

CARBONIC CARBOXYLIC ANHYDRIDES

Giuliana C. Tesoro, Dobbs Ferry, N.Y., assignor to J. P. Stevens & Co. Inc., Garfield, N.J.

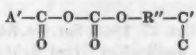
Division of Ser. No. 653,632, July 17, 1967, Pat. No. 3,575,960. This application June 18, 1970, Ser. No. 57,887
Int. Cl. C07c *69/00*, *53/28*, *53/34*
U.S. Cl. 260—408 2 Claims

A process for esterification of cellulose wherein a cellulosic material is reacted under mild conditions and in the absence of a catalyst with mixed carbonic carboxylic anhydrides having the characteristic group

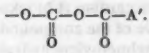


whereby a monovalent or divalent carbon acyl group is bonded to the cellulose by replacing active hydrogen, with consequent ester formation, and there is released as by-products an alcohol or glycol and carbon dioxide.

In addition, novel compounds of the carbonic carboxylic anhydride class which are useful in the formation of cellulose esters according to the above-mentioned process, and which are characterized by the formula



wherein A′ is polyfluoroalkyl or polyfluoroalkoxyalkyl, R″ is a lower alkylene group, and G′ is selected from the group consisting of hydrogen and



3,718,676

PREPARATION OF CARBOXYLIC ACIDS

Lawrence J. Kehoe, Huntington Woods, and Raymond A. Schell, Berkley, both of Mich., assignors to Ethyl Corporation, New York, N.Y.

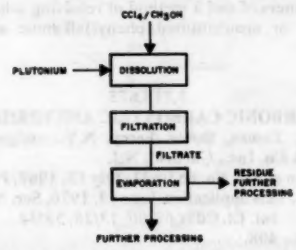
Continuation-in-part of Ser. No. 776,819, Nov. 18, 1968, abandoned. This application March 20, 1970, Ser. No. 21,473
Int. Cl. C08h *17/36*
U.S. Cl. 260—413 18 Claims

A process is described for preparing carboxylic acids from olefins, water and carbon monoxide in a liquid reaction medium using a combination of a tin or germanium salt and a platinum salt as the catalyst. Olefins having at least one α-carbon-to-carbon double bond and containing up to 30 carbon atoms are useful reactants. Suitable reaction media are alkyl ketones and alkyl ethers.

3,718,677
PLUTONIUM DISSOLUTION AND PLUTONIUM ALKOXIDE PRODUCT

Sam H. Pitts, Jr., Arvada, Colo., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 29, 1971, Ser. No. 213,301
Int. Cl. C07f 13/00
U.S. Cl. 260—429.1 8 Claims



Nonaqueous method of dissolving plutonium and product formed, the method being submerging plutonium in a bath containing an alkyl alcohol taken from the group ROH, where R is an alkyl radical having from 1 to 4 atoms of carbon, and a halogen, either as an absorbed gas or as a compound such as RX_n, where R is a straight chain alkyl radical and X is a halide, filtering the solution after dissolution is complete, and evaporating the filtrate to yield a plutonium compound.

3,718,678
1-(α-CYANOMETHYLENE-HYDRAZINO)-PHENOXY-3-AMINOPROPAN-2-OLS

Roy Farrand, and Roy Hull, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 27, 1969, Ser. No. 869,923
Claims priority, application Great Britain, Nov. 12, 1968, 53,612/68
Int. Cl. C07c 121/78
U.S. Cl. 260—465 D 12 Claims

The disclosure relates to 1-amino-3-(hydrazinophenoxy)-2-propanol derivatives, processes for their manufacture, pharmaceutical compositions containing them and a method of using them to produce cardiac β-blockade in warm-blooded animals. Representative of the compounds disclosed is 1-p-(α-cyano-α-ethoxycarbonylmethylenehydrazino)phenoxy-3-isopropylaminopropan-2-ol.

3,718,679
PHOSPHINE OR PHOSPHITE GOLD COMPLEXES OF THIOMALIC ACID

Elizabeth R. McGusty, Philadelphia, and Blaine M. Sutton, Hatboro, both of Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed April 27, 1971, Ser. No. 137,961
Int. Cl. C07f 1/12
U.S. Cl. 260—430 4 Claims

Phosphine or phosphite gold complexes of thiomalic acid having anti-arthritic activity are prepared by reaction of an appropriate phosphine or phosphite gold halide with thiomalic acid.

3,718,680
PHOSPHINE OR PHOSPHITE GOLD COMPLEXES OF THIOETHANOL AND DERIVATIVES THEREOF

Elizabeth R. McGusty, Philadelphia, and Blaine M. Sutton, Hatboro, both of Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed June 7, 1971, Ser. No. 150,734
Int. Cl. C07f 1/12
U.S. Cl. 260—430 5 Claims

Phosphine or phosphite gold complexes of thioethanol and derivatives thereof, such as ether or ester derivatives, having anti-arthritic activity are prepared by reaction of an appropriate phosphine or phosphite gold halide with thioethanol or its corresponding derivative.

3,718,681
ACYLOXYBENZOYLOXYSILANES

Patrick James Adams, Tecumseh, Mich., assignor to Stauffer-Wacker Silicone Corporation, Adrian, Mich.

Division of Ser. No. 734,248, June 4, 1968, Pat. No. 3,542,836. This application April 23, 1970, Ser. No. 43,312
Int. Cl. C07f 7/02, 7/08
U.S. Cl. 260—448.2 R 5 Claims

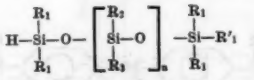
Acyloxyaroyloxysilanes and acyloxyaroyloxysiloxanes, especially acyloxybenzoyloxysilanes and acyloxybenzoyloxysiloxanes, are described as new compositions of matter. These compositions are useful as cross-linkers and surfactants for polyurethanes.

3,718,682
PROCESS FOR OBTAINING HYDROGENOCHLOROSILANES

Georges Bakassian, Caluire, and Andre Bazouin, Luzinay 38, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Dec. 20, 1971, Ser. No. 210,205
Claims priority, application France, Dec. 22, 1970, 7046220
Int. Cl. C07f 7/08
U.S. Cl. 260—448.2 P 8 Claims

Dialkylhydrogenochlorosilanes are obtained by reacting a siloxane



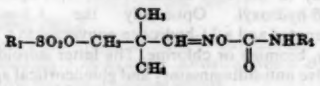
with a chlorosilane $(R_4)_p Si Cl_{4-p}$
in the presence of a hexaalkylphosphotriamide or N-alkyl-pyrrolidone, where R_1 is C_1 — C_8 alkyl, R_2, R_3, R'_1 and R_4 are alkyl or alkenyl having up to 6 carbon atoms, cycloalkyl or cycloalkenyl having 5 or 6 ring carbon atoms, or henyl, alkylphenyl or phenylalkyl and where R'_1 can also be hydrogen, and R_4 can also be hydrogen or chloromethyl, n is zero or an integer up to 20, preferably 0 – 5, and p is 0, 1 or 2.

3,718,683
PROPANAL DERIVATIVES

Odd Kristiansen, Reinach, Basel-Land, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Nov. 12, 1971, Ser. No. 198,420
Claims priority, application Switzerland, Nov. 20, 1970, 17,206/70
Int. Cl. C07c 143/68
U.S. Cl. 260—456 A 9 Claims

2,2-dimethyl-propanal-carbamoyloximes of the formula



wherein R_1 represents C_1–C_4 alkyl, C_2–C_4 alkenyl or phenyl and R_2 represents C_1–C_4 alkyl, processes for their production and their use for pest control.

3,718,684
METHOD FOR SYNTHESIZING ALPHA-HALOACRYLONITRILE ACID

Kailash C. Pande, and George M. Trampe, both of Parkersburg, W. Va., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 7, 1969, Ser. No. 864,540
Int. Cl. C07c *121/16*
U.S. Cl. 260—465.7 **2 Claims**

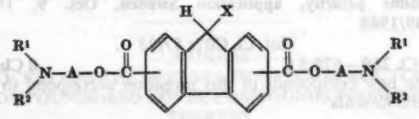
A method of preparing α-haloacrylic acid and derivatives thereof from dihalopropionic acid and derivatives using aqueous ammonium hydroxide or anhydrous ammonia. The reaction proceeds by dehydrohalogenation of the dihalo compound to provide the α-halo compound.

3,718,685
FLUORENOL BIS-BASIC ESTERS

Arthur D. Sill, and Robert W. Fleming, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

Division of Ser. No. 790,171, Jan. 9, 1969, Pat. No. 3,647,860.
This application May 14, 1971, Ser. No. 143,424
Int. Cl. C07c *69/76*
U.S. Cl. 260—473 F **7 Claims**

Novel fluorene and fluorenol bis-basic ester compounds, their method of preparation and use as antiviral agents. The compounds are of the formula



wherein:

A. each of R^1 and R^2 is hydrogen, (lower) alkyl, cycloalkyl of three to six ring carbon atoms, alkenyl of three to six carbon atoms or each set of R^1 and R^2 taken together with the nitrogen to which they are attached is pyrrolidino, piperidino, N-(lower)alkylpiperazino or morpholino;

B. each A is alkylene of two to about eight carbon atoms and separates its adjacent oxygen and nitrogen atoms by an alkylene chain of at least two carbon atoms; and

C. X is H or OH; or a pharmaceutically acceptable acid addition salt thereof.

3,718,686
ALKYNYL ESTERS OF ALKOXYBENZOIC ACIDS

Madhukar Subraya Chodnekar, Basel; Albert Pfiffner, Pfaffhausen; Norbert Rigassi, Arlesheim; Ulrich Schwieter, Reinach, and Milos Suchy, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed March 10, 1971, Ser. No. 123,060
Claims priority, application Switzerland, March 25, 1970, 4621/70
Int. Cl. C07c *69/78*
U.S. Cl. 260—473 R **8 Claims**

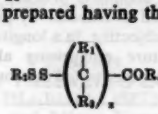
Alkynyl, benzyl or phenyl, ethers and esters which are ring substituted with an oxy or a thio aliphatic chain. These ethers and esters are useful in killing and preventing the proliferation of insects by upsetting their hormonal balance.

3,718,687
SULFUR CONTAINING CARBOXYLIC ACIDS

Carl D. Emerson, Kansas City, and Paul C. Aichenegg, Prairie Village, Kans., assignors to Baychem Corporation, New York, N.Y.

No Drawing. Application June 20, 1969, Ser. No. 835,229, now Patent No. 3,629,313, which is a division of application Ser. No. 401,253, Oct. 2, 1964, now Patent No. 3,442,941. Divided and this application May 6, 1970, Ser. No. 35,238
Int. Cl. C07c *149/00, 149/20*
U.S. Cl. 260—479 R **12 Claims**

Compounds are prepared having the formula



where

R_1 and R_3 are selected from the group consisting of hydrogen, lower alkyl, carboxyl lower alkyl, carbocyclic aryl, carbocyclic haloaryl, haloalkyl, and ester of carboxy lower alkyl;

R_2 is selected from the group consisting of polyhaloethyl and polyhalovinyl;

R_4 is selected from the group consisting of OH, SH, alkyl, carbocyclic aryl, halocarbocyclic aryl, haloalkyl, and alkylthioalkyl,

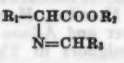
where R_6 and R_7 are selected from the group hydrogen, alkyl and carbocyclic alkyl and R_6 and R_7 together with N complete a heterocyclic ring, and OMe where Me is selected from the group consisting of the metals of Groups I, II, VI, VII and VIII of the Periodic Table; and x is an integer from 1 to 2 inclusive. Such materials have been found useful to kill nematodes, fungi and undesirable plants. They are also useful as defoliating agents.

3,718,688
ALKYLIDINE AND ARYLIDINE AMINO ACID ESTERS, AND ALKYL AND ARYL AMINO ACID ESTERS

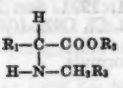
Jefferson W. Davis, c/o Radio-Carbon Lab., 1012 Washington Street, San Carlos, Calif.

Filed Oct. 18, 1967, Ser. No. 676,057
Int. Cl. C07c *101/14*
U.S. Cl. 260—482 R **3 Claims**

Several series of new organic compounds and methods of preparing same are disclosed. These include compounds of the general formula for alkylidine and arylidine amino acid esters:



and the general formula for alkyl and aryl amino acid esters:



For both these formulas, R_1 and R_3 are each of the group consisting of H, an aryl or alkyl radical, with or without other functional groups and R_2 is an alkyl radical or aryl radical with or without functional groups. The compounds are useful for identification of amino acids by gas liquid chromatography and as pharmaceuticals, and for the separation of L-amino acids from natural sources, such as protein and peptide hydrolysates.

3,718,689

PREPARATION OF TRISUBSTITUTED-HYDROXYALKYL ALKANOATES

James H. McCain, and Louis E. Theiling, both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Feb. 10, 1972, Ser. No. 225,108
Int. Cl. C07c *67/00*
U.S. Cl. 260—494 8 Claims

A continuous process for producing high ratios of trisubstituted-hydroxyalkyl alkanoate product with relation to undesirable trisubstituted alkanediol by-product which comprises continuously subjecting, in a longitudinal-flow zone, an intimate liquid mixture comprising aldehyde and small amounts of relatively concentrated aqueous basic solution.

3,718,690

FORMATION OF NAPHTHALENE-2,6-DICARBOXYLIC ACID

Ronald D. Bushick, Glen Mills, Pa., and Oscar L. Norman, Wilmington, Del. (both % Sun Oil Company, P.O. Box 426, Marcus Hook, Pa. 19061), and Harry J. Spinelli, 14 New Almond St., Vineland, N.J. 08360

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,467
Int. Cl. C07c *63/38*
U.S. Cl. 260—515 P 4 Claims

A method of preparing pure naphthalene-2,6-dicarboxylic acid in high selectivity by reacting sodium-2-naphthoate with carbon monoxide, sodium carbonate and sodium formate at a temperature in the range of about 275 to 450° C. and in a carbon monoxide atmosphere at a gauge pressure of about 300 to 700 p.s.i.

3,718,691

REDUCTION OF AQUEOUS THIOSULFATE SOLUTIONS CONTAINING FORMATE WITH CARBON MONOXIDE

Paul M. Yavorsky, Monongahela, and Everett Gorin, Pittsburgh, both of Pa., assignors to Consolidation Coal Company, New York, N.Y.

Division of Ser. No. 128,750, March 29, 1971, Pat. No. 3,687,614, which is a continuation-in-part of Ser. No. 879,224, Nov. 24, 1969, Pat. No. 3,584,042, which is a continuation-in-part of Ser. No. 667,479, Sept. 13, 1967, abandoned. This application April 12, 1972, Ser. No. 243,259
Int. Cl. C07c *51/00*
U.S. Cl. 260—542 7 Claims

Sodium, potassium, or ammonium thiosulfate is converted in one stage to the corresponding formate and H_2S by heating the thiosulfate to an elevated temperature above 475°F. in the presence of carbon monoxide, steam, and one of the following: sodium, potassium, and ammonium formates.

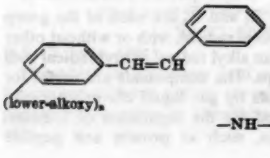
3,718,692

N-STILBENYLACRYLAMIDES

Durvasula V. Rao, Hamden, Henri Ulrich, Northford, and Fred A. Stuber and Adnan A. R. Sayigh, North Haven, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application Oct. 6, 1969, Ser. No. 864,218, now Patent No. 3,583,940. Divided and this application Feb. 1, 1971, Ser. No. 111,692
Int. Cl. C07c *103/60*
U.S. Cl. 260—562 A 2 Claims

Stilbenes of the formula



wherein *n* is an integer from 1 to 3, *m* is an integer from 0 to 1, A is lower-alkylene and R is hydrogen or lower-alkyl, are disclosed, as well as homopolymers of said compounds, and copolymers of said compounds with monomers containing a polymerizable $CH_2=C<$. The above stilbenes and the polymers derived therefrom are photosensitive and can be used in the preparation of photoresist systems.

3,718,693

MONOMERIC EMULSION STABILIZERS CONTAINING AN N-DIALLYLACETAMIDO OR N-DIMETHALLYLACETAMIDO RADICAL

Carlos M. Samour, Wellesley, and Mildred C. Richards, Wakefield, both of Mass., assignors to The Kendall Company, Walpole, Mass.

Filed May 26, 1970, Ser. No. 40,715
Int. Cl. C07c *103/30*
U.S. Cl. 260—561 A 11 Claims

Quaternary ammonium salts having an N-diallylacetamido or N-dimethallylacetamido radical and a lipophilic radical covalently linked to the quaternized nitrogen are disclosed. These quaternary ammonium salts are useful as monomeric emulsion stabilizers.

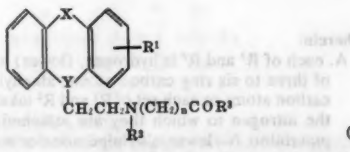
3,718,694

N-ARYLACYLAMINO-ALKYL- AND-ALKYLIDENE-DIBENZO [a,d]CYCLOHEPTENES AND-ANTHRACENES AND THE SALTS THEREOF

Edgar Eriksoo; Hans Jacob Fex; Knut Bertil Hogberg, all of Halsingborg; Henri Rene' Mollberg, Paarp, and Oskar Adolf Rohte, Raa, all of Sweden, assignors to Aktiebolaget Leo, Halsovagen, Halsingborg, Sweden

Filed Oct. 1, 1969, Ser. No. 862,918
Claims priority, application Sweden, Oct. 9, 1968, 13649/1968
Int. Cl. C07c *87/28*
U.S. Cl. 260—570.5 C 8 Claims

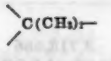
The new compounds of this invention correspond to the general formula



(I)

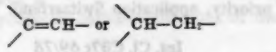
wherein

X represents the radicals $—CH_2—CH_2—$, $—CH=CH—$,



or —S— and

Y represents the radicals



(where the aromatic rings are attached to the same carbon atom),

n is 1, 2 or 3 (*n* = 1 is preferred),

R^1 represents H, F, or Cl,
R^2 represents an alkylgroup containing not more than four carbon atoms (methyl is preferred),
R^3 represents a phenyl, thienyl, furyl, or pyrryl group optionally substituted with not more than three, equal or different, substituents selected from the group consisting of F, Cl, OH, CF_3, as well as an alkyl and an alkoxy group containing not more than four carbon atoms; or a phenyl group substituted at 3,4-positions with an alkylidenedioxy (containing not more than six carbon atoms), cycloalkylidenedioxy (containing not more than six carbon atoms), cycloalkylidenedioxy (containing not more than six carbon atoms) or ethylenedioxy group, the compounds act on the C.N.S. as well as pharmaceutically acceptable acid addition salts thereof.

3,718,695

PURIFYING BIS(PERFLUOROALKYL) NITROXIDE

Russell R. Reinhard, Hopewell Junction, N.Y., and William D. Blackley, Lake Elmo, Minn., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 811,119, March 27, 1969, Pat. No. 3,644,449. This application Feb. 11, 1971, Ser. No. 114,713
Int. Cl. C07c *87/22*
U.S. Cl. 260—583 D 2 Claims

A method of purifying crude bis(perfluoroalkyl) nitroxide comprising contacting said crude nitroxide with mercury at a temperature between about −10 and 35°C. utilizing a reactant mole ratio of crude nitroxide of said mercury to said crude nitroxide of between about 1:10 and 100:1 to form a bis(perfluoroalkyl) nitroxide mercuride intermediate, separating said mercuride, and heating said separated mercuride at between about 50 and 100°C. to reform said mercury and bis(perfluoroalkyl) nitroxide and separating the reformed nitroxide from the reformed mercury.

3,718,696

PROCESS FOR THE PREPARATION OF MACROCYCLIC COMPOUNDS AND NOVEL COMPOUNDS PRODUCED THEREBY

Bradja D. Mookherjee, Matawan, and Ernst T. Theimer, Rumson, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed March 11, 1970, Ser. No. 18,757
Int. Cl. C07c *49/27*, *45/02*
U.S. Cl. 260—586 A 1 Claim

A process for preparing muscone for 1,9-cyclohexadecadiene involving a number of steps. Monoepoxidized 1,9-cyclohexadecadiene upon treatment with alkyl lithium is converted into an α,β-unsaturated alcohol and oxidized into the corresponding α,β-unsaturated ketone. This upon treatment with alkyl magnesium halide in the presence of cuprous chloride is converted to β-methyl-cyclohexadecenone and then hydrogenated to homomuscone (β-methyl-cyclohexadecanone). Homomuscone dibromide undergoes a Favorski rearrangement to produce a mixture β-and γ-methyl-cyclopentadecene-carboxylates (3:7) which on treatment with hydrazoic acid is converted into α-methyl-cyclopentadecanone and muscone, respectively.

3,718,697

NOVEL FRAGRANCE MATERIALS AND PROCESSES THEREFOR

Seymour Lemberg, 218 Heats Avenue, Elizabeth, N.J.

Continuation-in-part of Ser. No. 667,452, Sept. 13, 1967, abandoned. This application Aug. 13, 1968, Ser. No. 764,978
Int. Cl. C07c *45/02*, *40/27*
U.S. Cl. 260—586 A 6 Claims

Fragrance materials prepared by acylation with cyclization of trimethylcyclododecatriene, processes for producing same, and perfume compositions containing such materials.

3,718,698

ISOLONGIFOLENE PROCESSES AND PRODUCT

John B. Hall, Oakhurst, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Filed Nov. 24, 1969, Ser. No. 879,543
Int. Cl. C07c *45/04*
U.S. Cl. 260—587 11 Claims

Novel processes for producing isolongifolene ketone and its epimer which comprise treating isolongifolene with a peroxygen compound under acidic conditions to obtain a substantially fully saturated ketone, as well as the saturated epimer, and perfume compositions containing such products.

3,718,699

PROCESS OF PREPARING 4,4′-DITHIOBIS (2,6-DI-t-BUTYLPHENOL)

Tamotsu Fujisawa and Mizuo Yamamoto, Sagamihara, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

No Drawing. Filed Apr. 24, 1970, Ser. No. 31,756
Claims priority, application Japan, Apr. 30, 1969, 44/32,755
Int. Cl. C07c *149/38*
U.S. Cl. 260—608 4 Claims

A new process for the preparation of 4,4′-dithiobis(2,6-di-t-butylphenol) is disclosed.

Hindered phenol, 2,6-di-t-butylphenol, is reacted with sulfur monochloride in the absence or presence of a catalytic amount of iron powder or a Lewis acid. The process yields 4,4′-dithiobis(2,6-di-t-butylphenol) economically and in a high yield.

3,718,700

NEW AND USEFUL DITHIOLS, THEIR PREPARATION AND COMPOSITIONS MADE FROM THEM

Christian Esclamadon, 64 Billere; Yves Labat, 64 Pau, and Jean-Baptiste Signouret, 64 Billere, all of France, assignors to Societe Anonyme dite: Societe Nationale des Petroles D'Aquitaine, Tour Aquitaine, France

Filed Jan. 28, 1970, Ser. No. 6,553
Claims priority, application France, Jan. 31, 1969, 6902064
Int. Cl. C07c *149/14*
U.S. Cl. 260—609 R 3 Claims

New dithiol compounds have formal and thioether groups and the general formula

$$HS—R—S—(CH_2)_3—O—CH_2—O—(CH_2)_3—S—R—SH$$

in which R is a divalent radical of from one to 10 carbon atoms; it can be a substituted or unsubstituted, linear or branched aliphatic group, a cycloalkyl group or an aromatic group, and it may comprise one or more thioether groups. These compounds are prepared by causing a dithiol of the formula HS—R—SH to react with a diallyl formal.

These new dithiol compounds are used for the plasticization of sulphur and for the production, as new industrial products, of plastic sulphur compositions.

3,718,701

PREPARATION OF MIXED UNSYMMETRICAL ETHERS

John M. Holovka, Englewood, and Edward Hurley, Jr., Littleton, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Feb. 18, 1970, Ser. No. 12,439
Int. Cl. C07c *41/10*
U.S. Cl. 260—611 R 8 Claims

Salts of Group VIII, row 5 and 6, metals, e.g. ruthenium chloride, catalyze liquid phase homogenous catalysis reaction of alpha, alpha-disubstituted olefins with alcohols to produce mixed ethers. These ethers are widely used in the formation of resins, medicines, preservatives, dyes, plastics, solvents and chemical intermediates.

3,718,702
PROCESS FOR PRODUCING DILITHIO HYDROCARBONS

Thomas A. Antkowiak, Cuyahoga Falls, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed April 14, 1971, Ser. No. 134,059
Int. Cl. C07f 1/02
U.S. Cl. 260—665 R 5 Claims

Dilithio hydrocarbons are produced by heating allyllithium or a hydrocarbon-substituted allyllithium for 20–200 hours at 50°–150° C. Substituted allyllithiums can have alkyl groups or aryl groups, but must have replaceable allylic hydrogen. The products are useful as iniators for polymerization.

3,718,703
BISORGANOALKALINE EARTH METAL COMPOUNDS AND A METHOD OF PREPARING SAME FROM BISORGANOMERCURIALS

Peter West, Wellesley, and Mary C. Woodville, Cambridge, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 2, 1970, Ser. No. 52,082
Int. Cl. C07f 3/00, 3/04
U.S. Cl. 260—665 R 23 Claims

Novel bisorganoalkaline earth metal compounds are prepared by reacting bisorganomercurials with calcium, strontium or barium. The novel process is conducted in a solvent. As an example, dibenzylcalcium is prepared by reacting dibenzylmercury with calcium in tetrahydrofuran. The bisorganoalkaline earth metal compounds are useful as metallating reagents in organic synthesis and as initiators in the polymerization of vinyl monomers, such as styrene and butadiene.

3,718,704
METHYLATION PROCESS

Duane K. Chapman; John W. Newman, both of Ashland, Ky., and William S. Green, Columbus, Ohio, assignors to Ashland Oil Inc., Columbus, Ohio

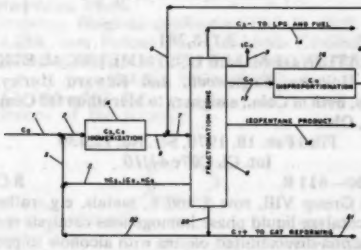
Filed Jan. 8, 1971, Ser. No. 105,108
Int. Cl. C07c 3/52
U.S. Cl. 260—671 M 23 Claims

A process for methylating an organic compound which comprises contacting the organic compound with a carbon-oxide containing reactant gas in the presence of an oxide of a Group IB, IIB, and/or VIB metal containing catalyst, and at a temperature between about 400° F and about 1200° F.

3,718,705
HEXANE CONVERSION

Jacob D. Kemp, El Cerrito, and Robert P. Sieg, Piedmont, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jan. 18, 1971, Ser. No. 107,202
Int. Cl. C07c 9/00
U.S. Cl. 260—676 R 12 Claims

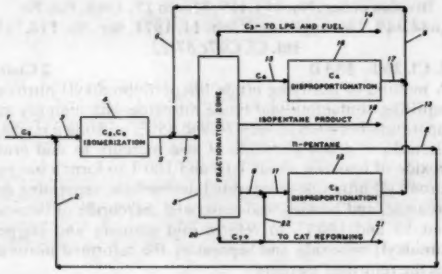


A process for producing isopentane which comprises: (a) isomerizing a C_6-rich hydrocarbon fraction in an isomerization zone to obtain at least isopentane and C_4 alkanes, (b) fractionating the isopentane from the C_4 alkane to obtain an isopentane product, (c) disproportionating at least a portion of the C_4 alkanes in a C_4 disproportionation zone to obtain at least n-pentane and C_3 hydrocarbons, and (d) isomerizing the n-pentane in the isomerization zone. Preferably, the isomerization zone uses a sulfactive isomerization catalyst so that the isomerization zone serves not only an isomerization function but also a purification function for subsequent disproportionation.

3,718,706
HEXANE CONVERSION

Robert P. Sieg, Piedmont, Calif., assignor to Chevron Research Company, San francisco, Calif.

Filed Jan. 18, 1971, Ser. No. 107,207
Int. Cl. C07c 9/00
U.S. Cl. 260—676 R 14 Claims



A process for producing isopentane which comprises: (a) isomerizing a C_6-rich fraction in an isomerization zone to obtain at least isopentane and C_4 alkanes, (b) fractionating the isopentane from the C_4 alkane to obtain an isopentane product, (c) disproportionating at least a portion of the C_4 alkanes in a C_4 disproportionation zone to obtain at least n-pentane and C_3 hydrocarbons, and (d) isomerizing the n-pentane in the isomerization zone. Preferably, the isomerizing zone uses a sulfactive isomerization catalyst so that the isomerization zone serves not only an isomerization function but also a purification function for subsequent disproportionation. Normal butane produced in the C_4 disproportionation zone is preferably disproportionated in a separate disproportionation zone to produce normal pentane which is isomerized to isopentane. It is particularly preferred to further integrate the disproportionation with the isomerization using common fractionation facilities.

3,718,707
OXIDATIVE DEHYDROGENATION

James A. Knippa, Jr., and Andrew K. Schwartz, Jr., both of Houston, Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Feb. 19, 1971, Ser. No. 117,129
Int. Cl. C07c 5/18, 11/30
U.S. Cl. 260—678 7 Claims

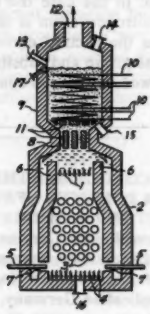
Oxidative dehydrogenation of hydrocarbons using oxygen and halogen and a catalyst of $FeA_xMo_yO_x$ with x being from 0.01 to 0.5 and y being from 0.001 to 0.1 and A being calcium, magnesium, strontium, barium or mixtures. n-Butane is dehydrogenated to a mixture of butadiene-1,3 and vinyl acetylene using a catalyst containing Fe, Mg, Ca and Mo.

3,718,708

METHOD AND APPARATUS FOR THERMAL CRACKING AND QUENCHING

Tokuji Ozawa, Sakai, Mikio Uyeda, Amagasaki, and Shigenori Suzuki, Osaka, Japan, assignors to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan

Filed July 16, 1970, Ser. No. 55,403
Claims priority, application Japan, July 18, 1969, 44/56,987
Int. Cl. C07c *3/00*
U.S. Cl. 260—683 R 9 Claims



Thermal cracking apparatus having a lower portion comprising a heating and reaction tower and an upper portion comprising a quenching tower. The lower portion includes spouting nozzles for dilution agents which cause circulation of the molten material in the tower, heating tubes, and raw material inlet nozzles, all arranged to be submerged in molten metal. The upper portion is provided with quenching tube bundles which are covered by fluidized solid grains or oils of high boiling point, the material being fluidized by the reaction products and diluents which are discharged from the lower portion.

3,718,709

PROCESS FOR PRODUCING ETHYLENE

Massimo Simonetta, Milan, Italy, assignor to Societa Italiana Resine S.I.R. S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 705,578, Feb. 12, 1958, abandoned. This application July 31, 1970, Ser. No. 60,149
Claims priority, application Italy, Feb. 23, 1967, 12962 A/67
Int. Cl. C07c *3/00*
U.S. Cl. 260—683 R 7 Claims

Hydrocarbons having a boiling point above 300° C (fuel oils) are vaporized by means of direct superheated steam; after separation of any liquid components a further amount of superheated steam is added to obtain a feed at 450°–550° C for a tubular pyrolysis reactor operating at 700°–800°C. The total steam content in the feed is 0.5 to 5.0 parts by weight steam per part by weight of the hydrocarbon.

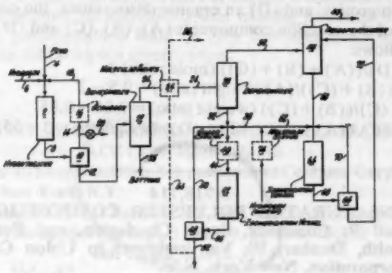
3,718,710

HYDROTREATING AND HYDROISOMERIZING C_5 AND C_6 HYDROCARBON STREAMS

Robert E. Quisenberry, Port Arthur, Tex., assignor to Texaco, Inc., New York, N.Y.

Filed June 30, 1971, Ser. No. 158,308
Int. Cl. C07c *5/28*
U.S. Cl. 260—683.67 12 Claims

A process is provided for upgrading a light naphtha fraction containing impurities deleterious to isomerization catalyst life and major amount of C_5 and C_6 hydrocarbons into plurality of relatively high octane hydrocarbon streams by hydrotreating the naphtha fraction and recovering a C_5—C_6 isomerizable hydrocarbon stream, separating the C_5 hydrocarbons from the C_6 hydrocarbons and introducing into separate reaction zones the C_5 and C_6 hydrocarbons respectively along with hydrogen under isomerization conversion conditions allowing consistent production of high octane blending components, separating and recovering from each conversion zone the iso C_5 and iso C_6 products and recycling for introduction to the respective



isomerization reaction zones unconverted normal C_5 and C_6 components.

3,718,711

POLYCHLORAL HOMOPOLYMERS CONTAINING POLYETHERS, POLYOLEFINS, OF POLYURETHANES

John C. Crano, Akron, Ohio, and Gerald M. Trenta, Norman, Okla., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 24, 1971, Ser. No. 146,522
Int. Cl. C08d *9/02*
U.S. Cl. 260—823 16 Claims

A polymer blend alloy comprising polychloral and an elastomer is disclosed. The polymer blend alloy is characterized by the presence of a single solid phase when viewed under an optical microscope at a magnification of 1,000 times and is particularly tough and durable. This chloral polymer is produced by polymerizing chloral in the presence of a dissolved elastomer.

3,718,712

PRESSURE-SENSITIVE ADHESIVES BASED ON CYCLIC TERPENE URETHANE RESIN

Leonard A. Tushaus, Bloomington, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed March 1, 1971, Ser. No. 119,838
Int. Cl. C08g *41/04*, *22/16*
U.S. Cl. 260—858 24 Claims

Pressure-sensitive polyurethane adhesives having the combined properties of high peel adhesion, quick stick, shear strength, and resistance to hydrocarbon solvents comprise the crosslinked polyurethane reaction product of the in situ reaction of polyhydroxyl terminated polyethers and polyesters with polyisocyanates to provide a product having a molecular weight between crosslinks of about 6,000 to about 40,000 and a urethane group concentration of about 0.7 to 1.3 per 1000 gms of polymer, and tackifier comprising the reaction product of cyclic terpene alcohols and aromatic isocyanates.

3,718,713

THERMOPLASTIC POLYAMIDE POLYESTER URETHANE UREA RESIN

Atsushi Tanaka, Ibaraki-shi, and Hachiro Goto, Takatsuki-shi, both of Japan, assignors to Teijin Limited, Osaka, Japan

Filed April 26, 1971, Ser. No. 137,657
Claims priority, application Japan, April 28, 1972, 45/36628
Int. Cl. C08g *41/04*, *22/10*
U.S. Cl. 260—858 10 Claims

A thermoplastic polyamide urethane urea resin derived from (A) a liner polyhydroxyl terminated prepolymer free from ethylene terephthalate units, which has an average molecular weight of 400 to 4,000 and is liquid at 80° C., (B) a linear hydroxyl-terminated polyester prepolymer, which has a molecular weight of 400 to 3,000 and a melting point of 50° to 220° C. and in which 35 to 95 percent by weight of the molecular chain consists of ethylene terephthalate units, (C) a

linear polyamide prepolymer having an average molecular weight of 400 to 4,000 and a melting point of 100° to 200° C., in which at least 80 percent of the both terminal groups are amino groups, and (D) an organic diisocyanate; the composition of the reaction components (A), (B), (C) and (D) being as follows:

i. (D)/((A)+(B)+(C)) (mole ratio) 1
ii. ((B)+(C))/(A) (weight ratio) = 0.5 − 2
iii. (C)/((B)+(C)) (weight ratio) = 0.06 − 0.85
iv. (C)/((A)+(B)+(C)+(D)) (weight %) = 3 − 55.

3,718,714

UNSATURATED POLYESTER COMPOSITIONS

Lowell R. Comstock, South Charleston, and Percy L. Smith, Dunbar, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Sept. 16, 1970, Ser. No. 72,798
Int. Cl. C08f *37/16, 43/08*
U.S. Cl. 260—862 23 Claims

The disclosure of this application is directed to unsaturated polyester compositions, containing a thermoplastic polymer of vinyl acetate having an average of at least one carboxyl group per molecule, which have particular utility in sheet molding applications to form thermoset articles characterized by excellent impact strength and by excellent surface properties such as excellent smoothness, excellent receptiveness to paints and excellent reproduction of the surface contours of the mold in which they are formed into shaped, thermoset articles.

3,718,715

BLENDS OF THERMOPLASTIC COPOLYESTER ELASTOMERS WITH VINYL CHLORIDE POLYMERS

Robert W. Crawford and William K. Witsiepe, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 19, 1971, Ser. No. 145,062
Int. Cl. C08g *39/10*
U.E. Cl. 260—873 14 Claims

A uniform blend of about 5–95% by weight vinyl chloride polymer having a tensile modulus of at least about 50,000 p.s.i. and about 95–5% by weight of at least one thermoplastic segmented copolyester polymer containing (1) about 5–90 weight percent long chain ester units derived from at least one long chain glycol having a molecular weight of about 600–6000 and at least one low molecular weight dicarboxylic acid having a molecular weight less than about 300, and (2) about 10–95 weight percent short chain ester units derived from at least one low molecular weight diol having a molecular weight of less than about 250 and at least one low molecular weight dicarboxylic acid having a molecular weight of less than about 300. These blends exhibit excellent abrasion resistance which is maintained even in the presence of a large amount of plasticizer, improved low temperature flexibility, impact resistance and increased scuff resistance. These blends also exhibit improved processing because of excellent thermal stability and low melt viscosity.

3,718,716

ACRYLIC FIBER AND A METHOD FOR MANUFACTURING THE SAME

Yasushi Joh, and Koji Mimura, both of Otake, Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan

Filed Dec. 11, 1970, Ser. No. 97,330
Claims priority, application Japan, Dec. 11, 1969, 44/99728; March 31, 1970, 45/26553
Int. Cl. C08f *29/56*
U.S. Cl. 260—898 8 Claims

A novel acrylic fiber having enhanced hydroscopic and antistatic properties is obtained from a copolymer (A) comprising, as unit components, at least 10 percent by weight of acrylonitrile, 0.2 to 20 percent by weight of N-3-oxohydrocarbon-substituted acrylamide and balancing quantity of the third hydrophilic monomer.

The acrylic fiber may be prepared from a mixture of the copolymer (A) and another copolymer (B) which comprises, as a unit component, at least 85 percent by weight of acrylonitrile.

For convenience, the two carbon atoms of the main chain of the ethylene group in the R′ group are numbered from the side of the nitrogen atom. In the case the carbon atom directly combined with the nitrogen atom is named as first carbon atom and another as the second carbon atom, R′ may be selected from ethylene group and substituted ethylene groups having at least one lower alkyl group combined to the first carbon atom.

3,718,717

ACRYLONITRILE COPOLYMER THREADS AND FILMS CONTAINING A POLYMER OF VINYL METHYL FORMAMIDE

Heino Logemann, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 24, 1971, Ser. No. 183,669
Claims priority, application Germany, Sept. 25, 1970, P 20 47 248.4
Int. Cl. C08f *29/56*
U.S. Cl. 260—898 6 Claims

Threads and films of acrylonitrile copolymers which contain 20 to 80 percent by weight of vinylidene chloride and/or vinyl chloride, which threads and films are free from vacuoles. The formation of vacuoles in threads or films of copolymers of acrylonitrile containing 20 to 80 percent by weight of vinylidene chloride and/or vinyl chloride can be substantially reduced or even completely prevented by adding homopolymers of vinyl methyl formamide or copolymers of vinyl methyl formamide with up to 90 mols percent of vinyl esters or acrylic acid esters to the spinning solutions of acrylonitrile copolymers and organic solvents in an amount of 0.5 to 20 percent by weight, based on the copolymer of acrylonirile and vinylidene chloride and/or vinyl chloride.

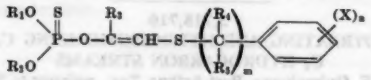
3,718,718

ARALKYLTHIOVINYL PHOSPHOROTHIOATES

Roger Williams Addor, Pennington, and Thomas Walter Drabb, Jr., Trenton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 807,921, March 17, 1969, abandoned. This application Dec. 7, 1970, Ser. No. 95,908
Int. Cl. C07f *9/16*; A01n *9/36*
U.S. Cl. 260—948 7 Claims

The acaricidal and insecticidal compounds have the formula:



wherein:
R_1, R_2 and R_3 are each lower alkyl,
R_4 and R_5 are lower alkyl or hydrogen,
X is lower alkyl or halo,
m is 1 or 2, and
n is 0 to 3

The trans and cis isomeric forms of the above compounds as well as mixtures of the trans and cis forms are embraced with the scope of the above formula.

The compounds are prepared by reacting an α-aralkylthioketone with an 0,0-di(lower)alkyl phosphorohalothioate in the presence of a polar solvent and certain strong bases such as NaOH or KOH.

3,718,719

METHOD OF MAKING A COOL BURNING GUN PROPELLANT

Leslie R. Olsen, Barbados, West Indies, assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Jan. 27, 1971, Ser. No. 110,330
Int. Cl. C06b 21/02
U.S. Cl. 264—3 B 4 Claims

A cool burning single base gun propellant composition comprised of a blend 12.6 percent nitration level nitrocellulose and 11.0 percent nitration level nitrocellulose in sufficient quantities to provide an average nitration level of 12 percent and a solvent method for the manufacture of said propellant composition wherein a single solvent ratio of ether and alcohol are employed in the colloidization process.

3,718,720

METHOD FOR MANUFACTURING FIBROUS, CARBONACEOUS COMPOSITES HAVING NEAR ISOTROPIC PROPERTIES

Foraker Lambdin, Jr., Alcoa, and William W. Randles, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 12, 1971, Ser. No. 105,975
Int. Cl. B29c 25/00; C01b 31/00, 31/07
U.S. Cl. 264—29 3 Claims

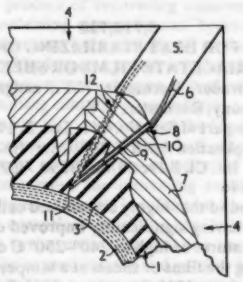
In the preparation of carbonaceous fiber composites a method has been found for controlling the orientation of the fibers whereby composites exhibiting near isotropic properties may be readily fabricated. The method comprises mixing discrete carbonaceous fibers with a particulate thermoplastic binder, heating the mixture sufficiently to melt the binder and attach the intermingled fibers at their nexus, cooling the attached fibers, crushing the fibrous mass into small agglomerates, forming the agglomerates into the desired shape, and thereafter heating the agglomerates to a temperature adequate for successively melting the binder to join together the fibers and converting the binder to carbon.

3,718,721

METHOD FOR CONTROLLING THE STATE OF CURE OF CURABLE ARTICLES

Eric G. Gould, and Edward P. Davis, both of c/o Fort Dunlop, Erdington, England

Continuation-in-part of Ser. No. 857,175, Sept. 11, 1969, Pat. No. 3,649,729, which is a continuation-in-part of Ser. No. 857,642, Sept. 10, 1969, abandoned, which is a continuation of Ser. No. 640,320, May 22, 1967, abandoned. This application Jan. 26, 1970, Ser. No. 5,492
Claims priority, application Great Britain, Feb. 6, 1969, 6,388/69
Int. Cl. B29h 5/02; G01n 25/00
U.S. Cl. 264—40 11 Claims



A method for controlling the state of cure of at least a part of a curable article during curing in a mould, in which a temperature sensing probe is inserted into a predetermined site in the article and the temperature of the site is monitored as a function of time. The state of cure of the site is computed from the temperature measurements and heating is discontinued when a predetermined state of cure has been reached, of which the following is a specification.

3,718,722

METHOD OF FORMING A POROUS CELLULOSE ACETATE MEMBRANE

Leonard A. Lee, Westfield, N.J., assignor to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 600,733, Dec. 12, 1966, abandoned. This application Sept. 17, 1970, Ser. No. 73,262
Int. Cl. B29d 7/02, 7/14
U.S. Cl. 264—41 9 Claims

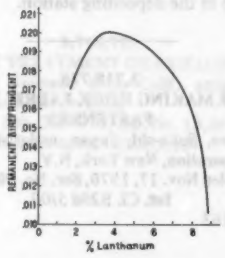
In the method of preparing a porous membrane adapted to separate a solute from a solution comprising: (a) dissolving a film-forming cellulosic ester in a solvent for said ester, (b) casting the resulting solution to form a membrane of substantially uniform thickness, (c) evaporating a portion of said solvent for a period of 0.5 to 5 minutes, (d) immersing the thus cast membrane in water, the steps which comprise: (e) annealing the membrane by initially heating it under tension to a temperature between about 70° and 90°C., which is about 5°–10°C. below the final annealing temperature and then by a final heat treatment without tension at the final annealing temperature from about 75° to 95°C.

3,718,723

USE OF WATER SOLUBLE LANTHANUM COMPOUNDS IN LEAD ZIRCONATE-LEAD TITANATE CERAMICS

David Bruce Fraser, Berkeley Heights, Henry Miles O'Bryan, Jr., Plainfield, and John Thomson, Jr., Spring Lake, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 23, 1970, Ser. No. 83,417
Int. Cl. C04b 33/12, 35/46, 35/48
U.S. Cl. 264—61 3 Claims



Highly transparent and optically uniform ferroelectric ceramics in the lanthanum substituted lead zirconate-lead titanate system are produced using a water soluble lanthanum compound as one of the starting materials and processing the materials in accordance with narrowly defined procedures. A preferred class of ceramics is produced starting with materials whose anions are in the proportion; Pb:$(1-x+z)$, La:x, Zr:y and Ti:$(1-y)$ where

$$0.02 \leq x \leq 0.12, \left(\frac{x}{4}\right) \leq Z \leq 0.8 \text{ and } 0.6 \leq y \leq 0.7$$

The use of 2 to 6 percent of a water soluble lanthanum compound results in unexpectedly high remanent birefringence in the hot pressed ferroelectric ceramic body as compared with bodies in which the same amount of lanthanum was added as a finely divided oxide.

3,718,724

METHOD OF BLOW MOLDING HOLLOW THERMOPLASTIC BODIES

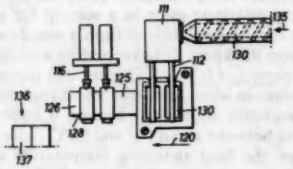
Rainer Holzmann, Roleber, Reiner Kader, Holzlar, and Alfred Thomas, Dambroich, Germany, assignors to Kautex-Werk Reinold Hagen, Hangelar uber Siegburg am Rhineland, Germany

Original application Apr. 28, 1969, Ser. No. 819,724, now Patent No. 3,583,031, dated June 8, 1971. Divided and this application Jan. 13, 1971, Ser. No. 106,187

Claims priority, application Germany, Apr. 6, 1968, P 17 78 404.2; Oct. 14, 1968, P 18 02 915.7–16, P 18 02 916.8; Dec. 7, 1968, P 18 13 367.0; Dec. 10, 1968, P 18 13 618.0

Int. Cl. B29c *17/06, 17/07, 23/00*

U.S. Cl. 264—98 5 Claims



For the blow molding of hollow articles there is provided a receiving station where parisons are prepared, a removing station where the blow molded articles are released from the mold and a depositing station where the articles are placed for transportation or treatment. A mold is movable between the receiving and the removing station and a gripper is movable between the removing and the depositing station. When the mold takes a parison in the receiving station, the gripper grasps a blow molded article in the removing station previously left there by the mold. When the mold opens and releases an article in the removing station, the gripper releases the previously grasped article in the depositing station.

3,718,725

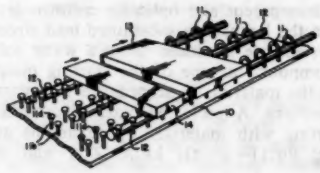
METHOD FOR MAKING HOOK FABRIC MATERIAL FOR FASTENERS

Hisashi Hamano, Soka-shi, Japan, assignor to International Knitlok Corporation, New York, N.Y.

Filed Nov. 17, 1970, Ser. No. 90,382

Int. Cl. B29d *5/00*

U.S. Cl. 264—163 3 Claims



Methods are disclosed including the use of heat and chemicals for converting loops upstanding from a base fabric into hook members suitable for use in hook and loop fasteners.

3,718,726

METHOD OF MAKING SHOE BOTTOM MOLD SEALS

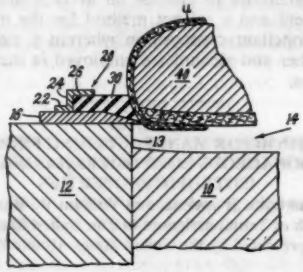
John J. Taylor, Leicester, England, assignor to USM Corporation, Boston, Mass.

Filed Jan. 21, 1971, Ser. No. 108,372

Claims priority, application Great Britain, Jan. 24, 1970, 3,537/70

Int. Cl. B29c *1/02;* A43d *65/00*

U.S. Cl. 264—219 2 Claims



A shoe sole mold having movable side mold members including plates engaging the side of a shoe with resilient sealing members on the plates and compressible against the shoe for sealing the mold cavity and a method of making said mold.

3,718,727

STRETCHING FILM OF PARTIALLY CRYSTALLINE POLYMERS

Eudaldo Sabater, 6733 Hassloch, and Lothar Schlemmer, 6701 Maxdorf, both of Germany, assignors to Badische Anilin-& Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Land Rheinland-Pfalz, Germany

Filed Oct. 5, 1970, Ser. No. 78,104

Int. Cl. B29d *7/24*

U.S. Cl. 264—289 5 Claims

Manufacture of stretched film of partially crystalline polymers such as polyamides wherein preformed film is transversely stretched at a temperature of from 80° to 210°C after forming a groove along an edge in the machine direction of the film, the depth of the said groove being from more than one tenth up to thirty times the tolerance of thickness variation of the film.

3,718,728

PROCESS FOR HEAT STABILIZING CELLULOSE TRIACETATE FILMS OR SHEETS

Robert W. Schrader, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 441, Jan. 2, 1970, abandoned. This application April 3, 1970, Ser. No. 25,568

Int. Cl. B29c *25/00;* B29d *7/02*

U.S. Cl. 264—346 2 Claims

It has been found that highly crystallized cellulose triacetate films or sheets having significantly improved dimensional stability at temperatures as high as 240°–250° C can be manufactured by heating the films or sheets at a temperature within the range of from about 230° C to about 270° C for a very short period of time (at most about 65 seconds) while the films or sheets are maintained under a lengthwise tension of at most about 0.035 pounds per inch.

3,718,729

DEFLUORINATION OF WET PROCESS PHOSPHORIC ACID

Ashok Babubhai Amin, Trenton, N.J., and Robert Lee Bristow, Lakeland, Fla., assignors to American Cyanamid Company, Stamford, Conn.

Filed March 15, 1971, Ser. No. 124,099
Int. Cl. C01b 25/16
U.S. Cl. 423—321 11 Claims

A process for the defluorination of phosphoric acid containing dissolved aluminum is described.

3,718,730

METHOD OF TREATING BARIUM TITANATE

Dennis L. Frey, Metuchen; Sam Divita, West Long Branch, and Edward J. Smoke, Edison, all of N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed June 23, 1971, Ser. No. 156,044
Int. Cl. C01f 11/00; C01g 23/00
U.S. Cl. 423—81 1 Claim

Barium titanate is upgraded by chemically treating the raw powder with acetic acid, ammonium hydroxide, or distilled water.

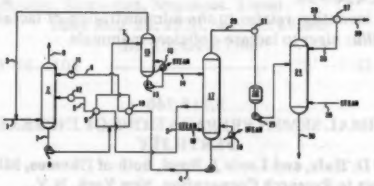
This invention relates in general to a method of upgrading the dielectric characteristics of ferroelectric materials and in particular to a method of upgrading commercial barium titanate.

3,718,731

PROCESS FOR RECOVERING AMMONIA FROM A GASEOUS MIXTURE CONTAINING NH3 AND HCN

Harrison Cornforth Carlson, Newark, Del., and Wayne Thomas Hess, Memphis, Tenn., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 26, 1970, Ser. No. 83,727
Int. Cl. C01c 1/12, 3/04
U.S. Cl. 423—238 4 Claims



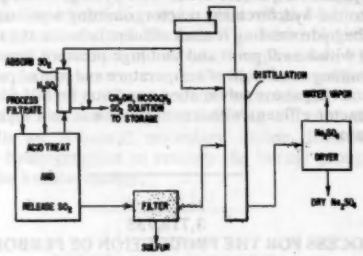
An improved process of recovering ammonia from a mixture of gases containing ammonia and hydrogen cyanide is provided. In the process, substantially all of the ammonia and a minor portion of hydrogen cyanide are absorbed in an aqueous solution of ammonium hydrogen phosphate in an absorbing zone, the resulting solution is passed into a hydrogen cyanide removal zone so as to remove absorbed hydrogen cyanide and only a minor proportion of absorbed ammonia, the substantially hydrogen cyanide free solution is passed into a stripping zone to remove the remaining available ammonia, and then the stripped ammonia is collected. The improvement in this process comprises removing the solution from the stripping zone in two streams such that one stream is leaner in ammonia than the second stream and passing both streams to the absorbing zone at a temperature within the range of 40°–70° C., the stream leaner in ammonia passed into the absorbing zone at a point where most of the ammonia has been absorbed.

3,718,732

METHOD OF RECOVERING CHEMICAL VALUES FROM A FORMATE-SODIUM HYDROSULFITE REACTION MIXTURE

Charles E. Winslow, Jr., Norfolk, Jack Plentovich, Nansemond County, and Mearl A. Kise, Portsmouth, Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.

Filed Jan. 13, 1971, Ser. No. 106,179
Int. Cl. C01d 5/02
U.S. Cl. 423—199 14 Claims



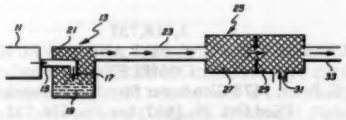
Method of recovering chemical values from a waste effluent such as a formate-sodium hydrosulfite reaction medium after removal of the sodium hydrosulfite. The method eliminates from the reaction medium residue those reducing agents which create a chemical oxygen demand in any body of water into which they might be discharged. The method includes: introducing sulfuric acid into the reaction medium; boiling to expel sulfur dioxide, continuing boiling and distilling with reflux of methyl alcohol and methyl formate; filtering the reaction medium residue to remove sulfur; and separating the residue salt from water after removing of sulfur.

3,718,733

CATALYTIC TREATMENT OF EXHAUST GASES

Dennis C. Gehri, Granada Hills, Calif., assignor to North American Rockwell Corporation

Filed Feb. 20, 1970, Ser. No. 13,246
Int. Cl. B01d 47/02, 53/34
U.S. Cl. 423—213 14 Claims



Nitrogen oxides are removed from a waste gas by reaction with carbon monoxide in the presence of a wire mesh selected from copper-containing alloys. Where the exhaust gas contains lead species or other impurities which tend to poison the catalyst, the exhaust gas contacts a molten alkali metal carbonate mixture which removes the lead species prior to the gas contacting the catalyst. Other poisonous impurities such as sulfur dioxide are also removed by the carbonate mixture.

3,718,734

HYDROGEN PURIFICATION

Robert I. Christensen, San Rafael, and David B. Larimore, Berkeley, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Nov. 16, 1970, Ser. No. 89,673
Int. Cl. C01b 17/16
U.S. Cl. 423—228 14 Claims

In a hydrotreating process, the improvement is made which comprises contacting the recycle hydrogen-rich gas stream with an H_2S and NH_3 absorbent to thereby remove from the recycle hydrogen-rich gas at least 90 volume percent of both the H_2S and NH_3 before the recycle hydrogen-rich gas is recycled to the hydrotreating reactor, omitting aqueous injection into the hydrotreating reactor effluent between the reactor effluent withdrawal point and said high pressure separator, and maintaining conditions of temperature and partial pressures of H_2S and NH_3 above sublimation condition for NH_4SH between the reactor effluent withdrawal point and said high pressure separator.

3,718,735

PROCESS FOR THE PRODUCTION OF PERBORATES

Wolfgang Flatz, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed July 6, 1970, Ser. No. 52,755
Claims priority, application Switzerland, July 29, 1969, 11519/69; Sept. 5, 1969, 13484/69; Sept. 10, 1969, 13650/69
Int. Cl. C01b 15/12
U.S. Cl. 423—281 5 Claims

This invention relates to a process for the production of perborates by the reaction of dried borates, the particles of which have an inner surface area of at least 0.4 m^2/g, with hydrogen peroxide in an organic solvent.

3,718,736

PROCESS FOR THE MANUFACTURE OF HYDROGEN FLUORIDE

William E. Watson, Mount Tabor, and Richard P. Troeger, Chatham, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 876,552, Nov. 13, 1969, abandoned. This application Sept. 20, 1971, Ser. No. 182,261
Int. Cl. C01b 7/22; C01f 11/46
U.S. Cl. 423—485 4 Claims

Hydrogen fluoride is produced continuously by reacting calcium fluoride (fluorspar) and sulfuric acid, at temperatures between about 250° and 600°F. in the presence of more than 3 parts calcium sulfate per part of by-product calcium sulfate produced from said reaction.

3,718,737

PROCESS OF TREATING BILE AND NOVEL IODINE-131 COMPLEX

Harry S. Penn, 2678 Glendower Street, Los Angeles, Calif.

Filed Oct. 20, 1967, Ser. No. 676,732
Int. Cl. A61k 27/04
U.S. Cl. 424—1 3 Claims

This invention, in one aspect, provides a novel process for obtaining a derivative from bovine bile as well as the novel product itself, the latter assaying about 95 percent taurocholic acid; and in a further aspect, provides a novel process for complexing radioactive iodine with the aforementioned bile derivative through the intermediary of a blood-derived protein which is first combined with ^{131}I and then complexed with the derivative and, further, provides this product. The radioactive iodine-containing product is useful in diagnosing tumors since it selectively concentrates in the latter.

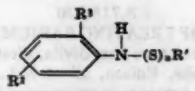
3,718,738

N-PHENYL SULFENAMIDES AND THEIR USE AS FUNGICIDES AND ONICIDES

Joseph G. E. Fenyes, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Application Jan. 30, 1969, Ser. No. 795,360, now Patent No. 3,549,700, dated Dec. 22, 1970, which is a continuation-in-part of application Ser. No. 545,887, Apr. 28, 1966. Divided and this application Mar. 27, 1970, Ser. No. 29,721
Int. Cl. A01n 9/12, 9/20
U.S. Cl. 424—32 H 8 Claims

Compounds of the formula



wherein R^2 is a cyano or nitro group in the para or meta position or a trifluoromethyl group, R^3 is hydrogen or alkyl of 1 to 3 carbon atoms when R^2 is cyano or nitro and R^3 is hydrogen when R^2 is trifluoromethyl, R′ is a polyhaloalkyl group having 1 to 2 carbon atoms and 3 to 5 halogens of atomic number 17 to 35, at least one of the halogens being bonded to the α carbon atom, a polyhalovinyl group wherein the halogens are of atomic number 17 to 35 or a 1-halo-1-nitroalkyl group having 2 to 4 carbon atoms wherein the halogen has an atomic number of 17 to 35 and n is 1 or 2 when R′ is said polyhaloalkyl group and n is 1 when R′ is said 1-halo-1-nitroalkyl group or said polyhalovinyl group. Compounds having the above formula are fungicidal and acarid ovicidal.

3,718,739

TREATING LACTASE DEFICIENCY WITH AN ACTIVE LACTASE

Theodore Cayle, Morganville, N.J., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Division of Ser. No. 812,348, April 1, 1969, Pat. No. 3,629,073. This application June 15, 1971, Ser. No. 153,423
Int. Cl. A61k 19/00
U.S. Cl. 424—94 2 Claims

This invention relates to the administration of lactase from *Aspergillus niger* to lactase-deficient mammals.

3,718,740

ANIMAL SEMEN PREPARATIONS OF INCREASED FERTILITY

Harold D. Hafs, and Louis J. Boyd, both of Okemos, Mich., assignors to Research Corporation, New York, N.Y.

Filed March 18, 1971, Ser. No. 125,861
Int. Cl. A61k 17/00
U.S. Cl. 424—105 5 Claims

The fertility of animal semen preparations is increased by adding β-glucuronidase thereto.

3,718,741

N-1 AND N-2 FRACTIONS OF NEOCARZIONSTATIN

Yasuo Koyama, Tokyo, Japan, assignor to Kayaku Antibiotic Research Company, Ltd., Tokyo, Japan

Filed July 21, 1970, Ser. No. 56,874
Claims priority, application Japan, July 24, 1969, 44/58518
Int. Cl. A61k 21/00
U.S. Cl. 424—118 2 Claims

A process of producing an antibiotic substance which comprises fractionating neocarzinostatin by passing an aqueous solution of said material through an ion exchange chromatography column or by electrophoresis and thereafter recovering at least one fraction characterized by a molecular weight of at least 9,000.

3,718,742
ANTIBIOTICS YL 704 AND PREPARATION THEREOF
Tomoharu Okuda and Shigemi Awataguchi, Tokyo, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan
Filed May 13, 1970, Ser. No. 36,989
Claims priority, application Japan, May 19, 1969, 44/38,648
Int. Cl. A61k *21/00*; C12d *9/14*
U.S. Cl. 424—121 **19 Claims**

A process for producing an antibiotic, which comprises cultivating a YL 704-producing strain of *Streptomyces platensis* var. sp. in an aqueous nutrient medium under submerged aerobic conditions at about 25–35° C. for about 48 to 60 hours to produce a fermentation broth. The antibiotic is then recovered from the fermentation broth.

3,718,743
5-PHENYL-2-PIPERIDONES AND 5-PHENYL-2-THIOPIPERIDONES IN COMPOSITIONS AND METHODS FOR TREATING PAIN, FEVER AND INFLAMMATION
Tsung-Ying Shen, and Bruce E. Witzel, both of Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Continuation-in-part of Ser. No. 808,660, March 19, 1969, abandoned. This application Nov. 19, 1970, Ser. No. 91,175
Int. Cl. A61k *27/00*
U.S. Cl. 424—267 **20 Claims**

Novel 5-phenyl-2-piperidone and 5-phenyl-2-thiopiperidone compounds and the processes for preparing the same are disclosed. In addition the invention concerns piperidones and thiopiperidones which exhibit anti-inflammatory properties and also possess an effective degree of antipyretic and analgesic activity.

3,718,744
PHARMACEUTICAL COMPOSITIONS COMPRISING AN α-AMINOALKYL - 4-HYDROXY - 3 -CARBOALKOXYAMINOBENZYL ALCOHOL
Carl Kaiser, Haddon Heights, N.J., and Stephen T. Ross, Berwyn, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.
No Drawing. Continuation-in-part of application Ser. No. 34,893, May 5, 1970, now Patent No. 3,657,319, dated Apr. 18, 1972. This application Dec. 3, 1971, Ser. No. 204,718
Int. Cl. A61k *27/00*
U.S. Cl. 424—300 **10 Claims**

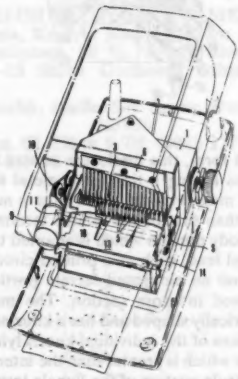
Pharmaceutical compositions having β-adrenergic stimulant activity comprising an α-aminoalkyl-4-hydroxy-3-carboalkoxyaminobenzyl alcohol. The active ingredients are prepared from 3-amino-4-benzyloxyphenones by conversion to an isocyanate, reaction with a lower alkanol to give 3-carboalkoxyaminophenones, bromination of these phenones and treatment of the resulting α-bromo derivatives with an N-benzyl secondary amine, followed by catalytic hydrogenation to remove the benzyl groups and reduce the ketone moiety.

3,718,745
METHOD OF SEDATION
Koji Nakanishi, New York, and Jonas A. Gylys, Manilius, N.Y.; said Gylys assignor to Bristol-Myers Company, New York, N.Y.
No Drawing. Filed Feb. 9, 1972, Ser. No. 224,970
Int. Cl. A61k *27/00*
U.S. Cl. 424—311 **2 Claims**

The specification discloses the use of 3,5-dimethyl-5-hydroxy-2,4-dicarbethoxycyclohexanone as a sedative-hypnotic.

ELECTRICAL

3,718,746
AUTOMATIC SOUND-REPRODUCING APPARATUS
Yoshio Kitamura, and Ikuo Suzuki, both of Suwa-gun, Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Suwa-gun, Naganom, Japan
Filed Aug. 28, 1970, Ser. No. 67,849
Int. Cl. G10f *1/06*
U.S. Cl. 84—101 **11 Claims**

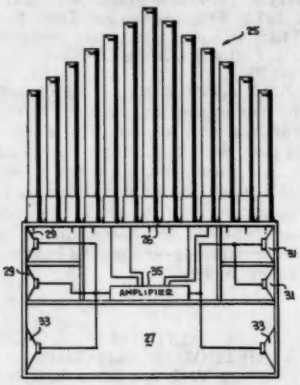


An automatic sound-reproducing apparatus designed to cooperate with a relatively rigid music tape or strip on which music is recorded through perforations formed along staff lines that actuate the reproducer means. The automatic sound-reproducing apparatus includes a pair of motor-driven pinch rollers for moving the music tape or strip along its length or in the direction of the staff lines; reproducer means comprising a horizontal shaft driven simultaneously with the pinch rollers and a plurality of discs each having thereon circumferentially spaced, radially extended pins or fingers, said pinned discs being mounted on the horizontal shaft for relative rotation juxtaposed each with two adjacent discs spaced apart from each other at a pre-determined distance substantially equal to the distance between two adjacent lines of the staff; and a metal comb having metal reeds, the free ends of which are extended for contact by the pins or fingers on the discs. When any pin or finger of the pinned disc is brought into engagement with or aligned with the musical-note perforation in the punched music tape or strip which is moved in sliding contact with the discs of the reproducer means responsive to the motor driven pinch rollers, the disc is independently or selectively rotated so that any particular pin or finger thereof touches or plays the metal so as reed to reproduce the sound.

3,718,747
ELECTROCOUSTIC PIPES FOR ELECTRONIC ORGANS
Daniel W. Martin, and John L. Stein, both of Cincinnati, Ohio, assignors to D. H. Baldwin Company, Cincinnati, Ohio
Filed July 29, 1971, Ser. No. 167,172
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.01 **25 Claims**

An acoustic radiation system for an electronic organ, in which separate radiators are used for each tone color, the radiators being physically arranged as in a pipe organ and each including a cylindrical pipe having an upwardly directed loudspeaker in its upper end, the loudspeaker being of the minimum diameter capable of acoustically radiating the band of frequencies over which it may be driven, and the pipe having an enclosed volume appropriate to form a Helmholtz resonator tuned near the lowest frequency of the band, the

pipe itself being mechanically rigid in terms of the material of which it is fabricated and also acoustically damped at higher frequencies by virtue of acoustical absorbent material which is distributed internally of the pipe so as to damp out standing



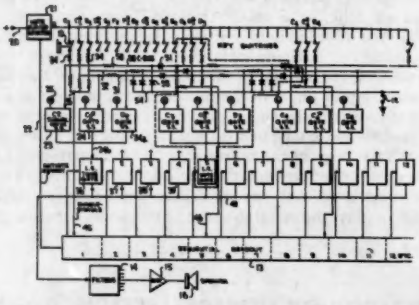
waves. Each pipe may be provided with a mouth, shaped and positioned to simulate visually the mouth of a true organ pipe, but of a size acoustically selected to resonate with the pipe enclosure at the desired low frequency to flatten the frequency response over the radiated band of frequencies.

3,718,748

MULTI-TONE ARPEGGIO SYSTEM FOR ELECTRONIC ORGAN

David A. Bunger, Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed Aug. 16, 1971, Ser. No. 171,879
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.24 **28 Claims**



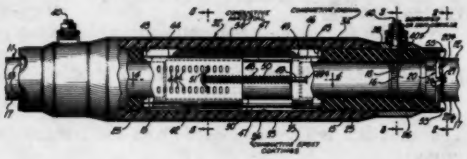
An automatic arpeggio system for an electronic organ, in which playing of a chord, or a single note, turns on tone signal gates for the played notes, and, at will, all octavely related notes, and initiates action of an asynchronous up-down multistage counter which sequentially reads out only the turned on gates, in sequence, either in an up-scan only, or up and then down. The gates lead to tone color filters, amplifiers and loudspeakers. Those counter stages which are selected to turn on gates are constrained to act as clock controlled bistable flip-flops, while the remainder act as monostable flip-flops with a time constant of the order of 30 microseconds, so that their set and reset involves inadequate time elapse to effect sounding of a note by closing of a tone gate.

3,718,749

DEVICE FOR COUPLING HIGH VOLTAGE CABLES

Francis V. Cunningham, Western Springs, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.

Filed July 19, 1971, Ser. No. 163,864
Int. Cl. H02g *15/08*
U.S. Cl. 174—73 R **15 Claims**



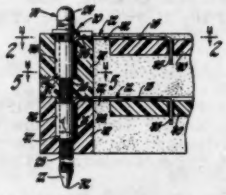
There is provided a coupling assembly for connecting high voltage cables and including a tubular housing of insulating material. A pair of tubular elastomeric insulating members are inserted into respective ends of the housing for receiving the end portions of a respective cable. Retainers close the opposite ends of the housing. A conductive inner shield is in the housing bore spaced from opposite ends of the housing. Suitable connector means connect the conductors of the cables in the end-to-end relation within the housing shield. The shield is electrically connected to the conductor so as to eliminate voltage gradient in the air spaces within the coupler. Means are provided within the housing resiliently loading the tubular elastomeric insulating members, thereby maintaining a void-free insulation and moisture seals throughout the thermal operating range of the coupler.

3,718,750

ELECTRICAL CONNECTOR

Eugene H. Sayers, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 12, 1971, Ser. No. 188,378
Int. Cl. H01r *5/08*
U.S. Cl. 174—94 R **3 Claims**

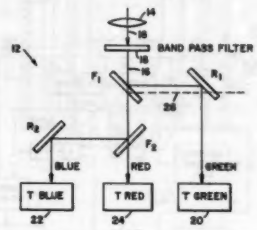


In a preferred form, this disclosure relates to an electrical connector means having a tin plated metal female terminal and a tin plated male terminal made from a metallic material which is softer than that of the female terminal. The female terminal has a body portion which is adapted to be connected with an electrical lead, such as a printed circuit on a printed circuit board, and an elongated ferrule portion which is C-shaped, as viewed in cross section. The male terminal is generally cylindrically shaped and has a knurled shank portion and with the apices of the individual knurls lying on a circumscribed diameter which is greater than the internal diameter of the C-shaped ferrule portion of the female terminal. The male terminal is connected to the female terminal by intersecting the same into the ferrule portion which causes the C-shaped ferrule portion to radially expand and the knurls on the shank portion to plastically deform whereby the male terminal is connected to the female terminal as a result of the contracting force exerted by the female terminal and the plastic deformation of the knurls of the male terminal.

3,718,751
OPTICS FOR HIGH SENSITIVITY COLOR TELEVISION CAMERA

John K. Landre, Menlo Park; Donald D. Kline, and Marc W. Broemmelsiek, both of Palo Alto, all of Calif., assignors to Commercial Electronics Incorporated, Mountain View, Calif.

Filed Oct. 12, 1970, Ser. No. 79,848
Int. Cl. H04n 9/08
U.S. Cl. 178—5.4 E 18 Claims

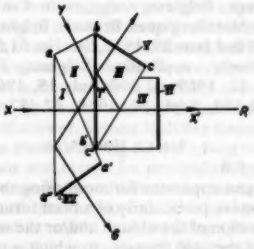


An optical system for high sensitivity television cameras employing parallel blue, green and red television tubes with one of the tubes being aligned with an optical aperture of the camera. A trichroic filter splits off a green image portion of the image received from the aperture and directs it via a green mirror to the green television tube. The remainder of the received image is passed to a dichroic filter which has a transmission cutoff point in the light wave band reflected by the trichroic filter and which reflects the blue image portion via a trim mirror to the blue television tube and transmits the red image portion to the red television tube. The reflecting surfaces of the filters and the mirrors are disposed at 45° to the incident light and are constructed so that their spectral transmission-reflection characteristics are insensitive to light polarization. The tubes, filters, mirrors and other components of the optical system are mounted to a relatively massive optical bench preventing image distortions and movement of the components under temperature changes, vibration, shock and the like. Means are also provided to operate the camera aperture, neutral density and color filters that can be swung into the light path through the camera from an end of the camera remote from the aperture.

3,718,752
COLOR TELEVISION CAMERA

Takashi Katsuta, Kenichi Kano, Mitsuru Kawasaki, and Yasuichi Ushiyama, all % Nippon Electric Company, Limited, 7–15 Shiba Gochome, Minato-ku, Tokyo, Japan

Claims priority, application Japan, Dec. 27, 1970, 46/938
Int. Cl. H04n 9/08; G02b 27/14
U.S. Cl. 178—5.4 TC 2 Claims

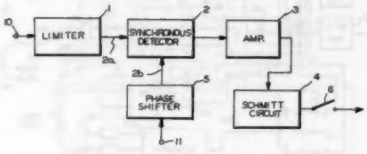


A color television camera employs a receiving lens system for directing light corresponding to a viewed subject along a first axis of a compound color separation prism. Also, auxiliary light from a source thereof, as for bias light purposes, is directed to the prism along an axis distinct from the first axis.

3,718,753
TINT-CONTROL INDICATING APPARATUS FOR COLOR TV RECEIVERS

Yoshitomi Nagaoka, Neyagawa-shi, and Takayuki Sagishima, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Jan. 6, 1971, Ser. No. 104,250
Claims priority, application Japan, April 20, 1970, 45/34163
Int. Cl. H04n 9/12
U.S. Cl. 178—5.4 HE 6 Claims

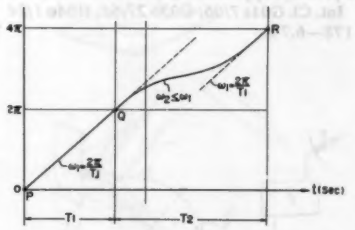


A tint-control indicating apparatus for color TV receivers has a phase detecting means for separating chrominance signal components having a phase within a selected narrow sector of the color-spectrum wheel from the chrominance signals. A pulse-forming means coupled to said phase detecting means generates a pulse in response to an output signal of the phase detecting means. An indicating means coupled to said pulse-forming means is caused by the pulse to produce a visible color change on the television screen.

3,718,754
VIDEO DISK SIGNAL RECORDING SYSTEM WITH CYCLICAL SPEED CONTROL

Takeshi Goshima, and Hideaki Sato, both of Ohta-ku, Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1971, Ser. No. 115,999
Claims priority, application Japan, Feb. 20, 1970, 45/15056
Int. Cl. G11b 5/82, 19/28; H04n 5/78
U.S. Cl. 178—6.6 DD 10 Claims

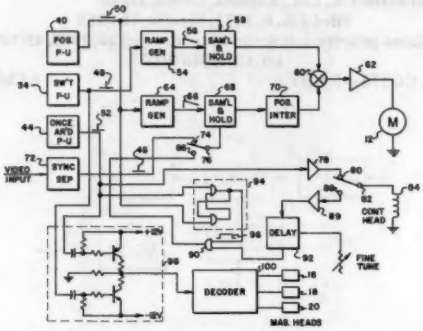


The video signals of the first or second field of a desired frame of the television signal may be recorded upon a circular track of an endless magnetic recording medium such as a magnetic recording disk which rotates at high speed in such a way that the starting points of the circular recording tracks may e axially aligned with one another. So a still picture may be reproduced without distortion thereof by reproducing the video signals of one field recorded upon one circular recording track, and further the reversed motion picture may be reproduced by reproducing the video signals in the reversed direction.

3,718,755
INTERLACING SYSTEM FOR SKIP-FIELD MAGNETIC RECORDING AND REPRODUCING

Philip M. Crosno, Cupertino, Calif., assignor to Cartridge Television, Inc., San Jose, Calif.

Filed June 26, 1970, Ser. No. 50,062
Int. Cl. H04n 5/06, 5/78; G11b 19/28
U.S. Cl. 178—6.6 SF 4 Claims

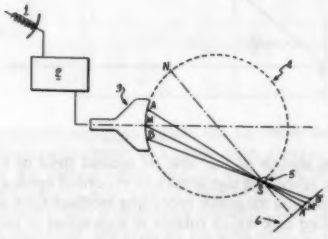


A skip-field magnetic recording and reproducing system records each video field in one oblique track on a magnetic tape by means of rotary magnetic heads, only one of which records, while all of the heads play back to supply the skipped fields. Certain of the magnetic heads are axially and angularly misaligned so that playback of at least one of the heads is displaced by one-half a line in a conventional video field. Synchronization is achieved by substituting a position generated head switching signal for the vertical sync. This results in interlacing of the played back field.

3,718,756
MAPPING RECTIFIER OF EARTH'S SURFACE RADIATION SIGNALS SCANNED BY ARTIFICIAL SATELLITE

Kantaro Watanabe, Tokyo, Japan, assignor to Research Corporation, New York, N.Y.

Filed May 14, 1971, Ser. No. 143,453
Claims priority, application Japan, June 18, 1970, 45/52398
Int. Cl. G01s 7/06; G03b 27/68; H04n 1/24
U.S. Cl. 178—6.7 R 7 Claims

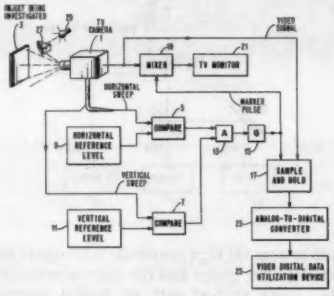


Disclosed is a device to obtain, through a special cathode-ray tube an optical system, a radiation image polarstereographically mapped directly from radiation scanning signals received from an artificial satellite.

3,718,757
TEMPERATURE MONITORING

Louis Gulitz, Yorktown Heights; Theodore W. Kwap, Brewster, and Daniel F. O'Kane, Katonah, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1970, Ser. No. 102,488
Int. Cl. H04n 5/26, 7/18
U.S. Cl. 178—6.8 14 Claims



A television camera, such as an infrared television camera, is positioned to view a hot surface, the temperature profile of which is to be monitored and the temperature at selected points of which is to be measured. The specific application to a Czochralski type crystal puller is described. A television monitor is employed to give the temperature profile and an indicator scheme is employed with the TV monitor to allow manual positioning of the indicator to visually chosen spots on the monitor whereby the temperature at those visually chosen spots is automatically provided. The horizontal and vertical voltage used to position the pointer is also used to control a sample and hold circuit to thereby allow the sampling and holding of the video signal corresponding to the selected point. The video signal sampled is converted to digital, which digital signal may be employed to provide a visual indication of the temperature at the selected point, or alternatively, to control a process or, for example, to be processed by a computer. The particular points chosen at which temperatures are to be determined, may systematically be achieved by way of a computer.

3,718,758
METHOD AND DEVICE FOR MONITORING THE WORKING OF A FURNACE

Nicolas Gerassimos Ponghis, and Claude Henri Osmael, both of Liege, Belgium, assignors to Centre National De Recherches Metallurgiques, Brussels, Belgium

Filed June 29, 1970, Ser. No. 51,513
Claims priority, application Belgium, June 27, 1969, 42,230; July 11, 1969, 42,346; July 15, 1969, 42,349; July 15, 1969, 42,350; Sept. 30, 1969, 42,452; Jan. 23, 1969, 42,636
Int. Cl. H04n 5/26
U.S. Cl. 178—6.8 3 Claims

A method and apparatus for monitoring the operation of a furnace, and more particularly of a blast furnace, by making a visual examination of the charge and/or the walls and internal accessories of the said furnace, in which a mobile probe including equipment to pick up optical rays that may comprise at least one television camera sensitive to the optical rays coming from the charge is inserted into the furnace charge

and the rays coming from the said charge are received by means of the said pick-up equipment, giving a representative

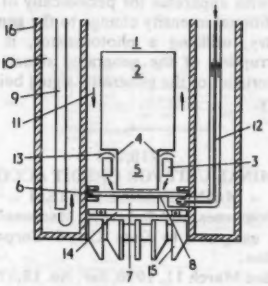


image of its and enabling the required characteristics to be deduced.

3,718,759

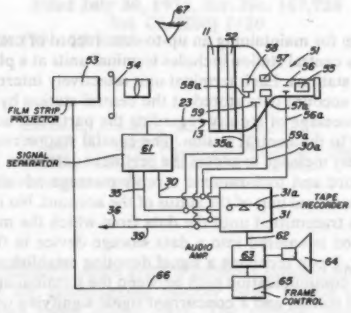
AUDIO-VISUAL TEACHING SYSTEM AND STUDENT RESPONSE APPARATUS

Leonard Reiffel, Chicago, Ill., assignor to Telestrator Industries, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 776,724, Nov. 18, 1968, abandoned. This application April 5, 1971, Ser. No. 131,523

Int. Cl. H01j *39/29*; H04n *7/18*

U.S. Cl. 178—6.8 **6 Claims**



An audio-visual teaching system whereby program-controlled responses in the form of linear drawings or notations or the like may be viewed as superimposed on a basic image and may be added by both the student and instructor with a probe member. Student must answer question correctly in some embodiments for program to proceed. In some embodiments, if the student answers incorrectly, a separate related system is energized which provides additional instruction leading toward the correct answer. System includes means for projecting a visual image onto a viewing face of a long residence time visual display plate and means for pre-recording at sub-video frequencies, dynamic linear additions to a background image as well as voice and other audio data. The background images are optionally used herewith. Such teaching system eliminates the necessity in certain instructional situations for using an electronic computer as required in the systems of the prior art and provides inexpensive programming and reproduction means.

3,718,760

SYSTEM FOR REPRODUCING MOTION PICTURES

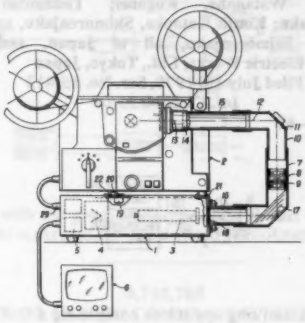
Gottfried Patels, and Erich Beck, both of Vienna, Austria, assignors to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Filed Oct. 26, 1970, Ser. No. 83,989

Claims priority, application Austria, Nov. 21, 1969, A 10923/69

Int. Cl. H04n *3/00*

U.S. Cl. 178—7.2 **3 Claims**



A television camera comprises a top wall and a camera tube having a light-sensitive surface. A motion picture projector is mounted on said wall and has a projector aperture, means for intermittently moving a film past said projector aperture, and illuminating means for illuminating a portion of said film in register with said projector aperture. Said camera has a telescopic optical system having an entrance opening approximately on the level of said projector aperture and adapted to form on said light-sensitive surface an image of a portion of said film which is illuminated in register with said aperture.

3,718,761

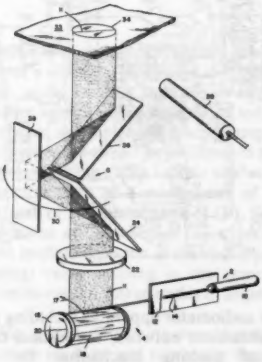
OMNIDIRECTIONAL PLANAR OPTICAL CODE READER

Jon H. Myer, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed March 27, 1968, Ser. No. 718,981

Int. Cl. H04n *1/04*

U.S. Cl. 178—7.6 **41 Claims**



An optical system for reading graphic codes, regardless of their orientation in a plane, includes apparatus for generating a scan of a shaped light beam and rotating the scan on and across targets having a code for transmission of the code to a detector. Alternatively, the code of the target may be included within the beam which is scanned across and rotated on the

detector. In both cases, the beam is so dimensioned as to enable proper reading of the code. Such reading is useful in inventorying, cataloging, and tabulating goods such as items in warehouses, factories, supply depots and various commercial retail outlets such as supermarkets.

3,718,762

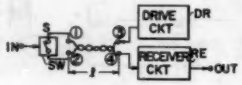
PULSE TRANSMITTING APPARATUS

Kazuo Nezu, Hachioji; Ziro Imabayashi, Murayama-gun; Kazutaka Watanabe, Koganei; Tadamitsu Iritani, Shimorenjaku; Kouju Kataoka, Shimorenjaku, and Michio Yoshioka, Shimorenjaku, all of Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed July 16, 1970, Ser. No. 55,412

Int. Cl. H04l *25/08*

U.S. Cl. 178—68 **6 Claims**



A pulse transmitting apparatus comprising a first transmission line connected to a current drive circuit at one end, a second transmission line stranded with the first and having an end connected to a receiver circuit located adjacent the drive circuit, and a pair of serial connected switches at the transmitting end of the apparatus for connecting together the other ends of the first and second transmission lines and sending a current pulse signal to the receiver circuit. The switches are operated simultaneously in response to an input signal and the apparatus contains means for absorbing pulses reflected back from the receiving end to the transmitting end of the apparatus.

3,718,763

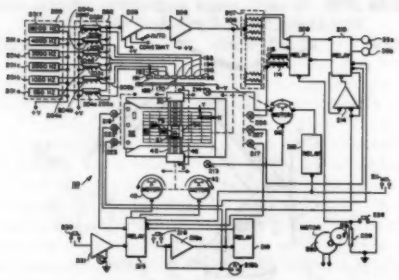
AUDIOMETER APPARATUS

Vernon W. Cannon, Austin, Tex., and Gordon N. Stowe, Northbrook, Ill., assignors to Beltone Electronics Corporation, Chicago, Ill.

Filed Dec. 21, 1970, Ser. No. 100,054

Int. Cl. H04r *29/00*

U.S. Cl. 179—1 N **15 Claims**



Disclosed is audiometer apparatus including a tone generator portion, attenuator network, accoustical transducer and two-dimensional plotting mechanism for automatically recording the subject's response to signals received at the transducer. The tone generator includes a plurality of continuous running oscillators whose discrete frequency signals are coupled through pulser circuitry to the attenuator by way of magnetic reed switches actuated by the movement of the plotter. Hearing loss information is plotted with a pair of different color ink pens disposed within a carriage on the plotting mechanism. Switching mechanisms control the movement of the plotter and the carriage in their respective directions, selectively move the pens into and out of contact with recording material, and switch the signals received by the transducer from one earpiece to the other. Random validity mechanism is incorporated with apparatus for periodically or manually inserting an additional intensity change to the generated tones. Pulser circuitry, utilizing a photoresistor, is adapted for periodic interruption of the generated signal, the rise and decay characteristics of the generated signal being controlled by the circuitry.

3,718,764

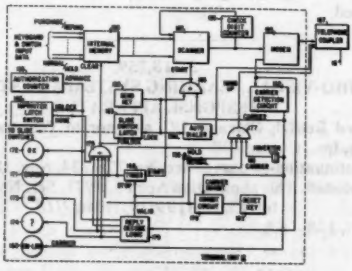
TERMINAL UNIT FOR CREDIT ACCOUNT MAINTENANCE SYSTEM

Raymond J. Deschenes, and Robert N. Macdonald, both of Atlanta, Ga., assignors to Data Coard Corporation, Minneapolis, Minn.

Filed March 11, 1970, Ser. No. 18,571

Int. Cl. H04m *1/06*

U.S. Cl. 179—2 DP **3 Claims**



A system for maintaining an up-to-date record of credit accounts at a central station includes terminal units at a plurality of remote stations. Each terminal unit selectively interrogates the credit account data stored at the central station by transmitting a message of inquiry regarding the particular account of interest to the central station. The central station responds to an inquiry message to access the pertinent data from the account record and to formulate a reply message advising the inquiring terminal unit of the status of the account. No inquiry message is transmitted until the data from which the message is assembled is entered into a data storage device in the terminal unit. Upon receiving a signal denoting establishment of a message communication path between the terminal unit and the central station and a concurrent signal signifying completion of entry of message data into the storage device, the terminal unit transmits the inquiry message to the central station. The reply message from the central station produces an appropriate visual signal at the terminal unit.

3,718,765

COMMUNICATION SYSTEM WITH PROVISION FOR CONCEALING INTELLIGENCE SIGNALS WITH NOISE SIGNALS

Josef Halaby, 1406 New York Ave., Brooklyn, N.Y.

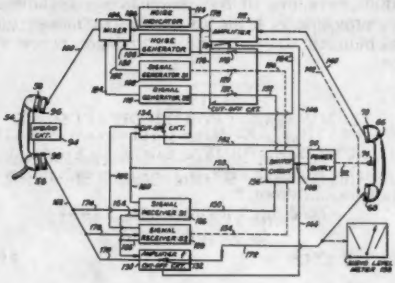
Filed Feb. 18, 1970, Ser. No. 12,180

Int. Cl. H04m *1/70*

U.S. Cl. 179—1.5 M **12 Claims**

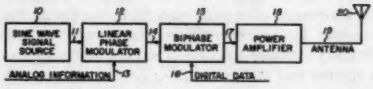
A communication system including phone stations, each of which includes a speaker-microphone arrangement with a noise generator and control circuits. The circuits are so connected that when the speaker-microphone portion of one station is transmitting intelligence to the other station, the first of these stations cannot transmit noise signals at the same time. However, this first station transmits a control signal to the other station to operate the control circuits therein to permit

the noise generator to transmit noise onto the connecting cable to conceal the intelligence signal originating with the first station. The apparatus employs a conventional phone installation, the handset of which is accommodated in a separate



casing, which in turn has a handset accommodated in the cradle of the telephone installation. The casing accommodates the noise generator and the control circuits as well as certain speaker and microphone elements necessary to cooperate therewith.

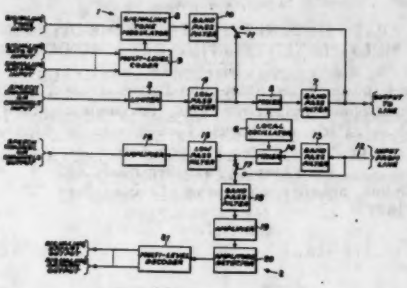
3,718,766
WIDE BAND MULTIPLEXING SYSTEM
Harris A. Stover, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa
Filed July 30, 1971, Ser. No. 167,728
Int. Cl. H04j *1/20*
U.S. Cl. 179—15 BM **12 Claims**



A communications system employs tandem phase modulation for multiplexing narrow band analog data with very high speed digital data. The narrow band data is applied as linear phase modulation of the system carrier, while the high speed digital data is applied as phase-shift modulation of the carrier.

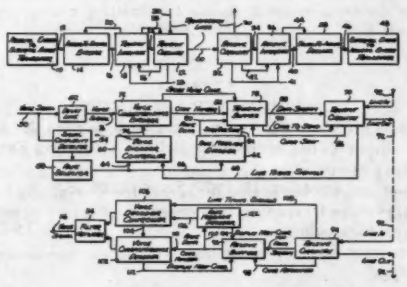
3,718,767
MULTIPLEX OUT-OF-BAND SIGNALING SYSTEM
Lyna W. Ellis, Westport, Conn., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed May 20, 1971, Ser. No. 145,138
Int. Cl. H04j *3/12*
U.S. Cl. 179—15 BM **9 Claims**

A multiplex out-of-band signaling system for a communication system having one or more frequency channels is disclosed. N signaling data gate N gated amplifiers coupled in common to a signaling tone having a frequency disposed outside the frequency channel or channels such that a different predetermined amplitude of the signaling tone is provided for each of the N signaling data according to a given amplitude code. These different amplitudes of the signaling tone are combined as a composite multi-level signal for transmission. At the receiver the composite signal is recovered and the levels therein are detected in a level decision circuit in ac-



cordance with the given amplitude code so that the N signaling data are separated and reproduced for utilization.

3,718,768
VOICE OR ANALOG COMMUNICATION SYSTEM EMPLOYING ADAPTIVE ENCODING TECHNIQUES
Carl Newton Abramson, and Douglas George Jones, both of Somerville, Mark T. Nadir, Warren, all of N.J., assignors to Adaptive Technology, Inc., Piscataway, N.J.
Filed Aug. 9, 1971, Ser. No. 169,993
Int. Cl. H04j *3/04*
U.S. Cl. 179—15 BA **31 Claims**



Voice and other analog information are transmitted from one to another of a plurality of stations in a communications system wherein, at the sending stations, an encoder samples the voice or other analog signal for sets of values of one or more characteristics, and assigned codes corresponding to the sampled sets of values are stored in sequence in a buffer. Each of the codes corresponding to the sample characteristics is assigned to respective ones of a multiplicity of discrete subperiods within each of a series of periods (P). Signal identifying receiving stations are inserted at indiscriminate rates on the transmission medium into the available subperiods having assigned meanings corresponding to the stored codes in a manner which removes the stored codes in sequence from the buffer.

Each receiving station detects its own identification signal on the transmission medium and correlates the subperiods in which the identification signals are detected with their respective assigned codes. A decoder converts such correlated codes to their respective assigned sets of sample values from which it reconstructs the original voice or other analog signal.

The system permits different and/or continuously varying sampling rates to be used by the stations without requiring fixed time or frequency channels. Thus, the system is generally

insensitive to the kind of analog input signal waveform presented for encoding, or the type of encoding or decoding technique employed.

3,718,769
PATH FINDING SYSTEM FOR TIME-DIVISION MULTIPLEXED TELEPHONE COMMUNICATION NETWORK

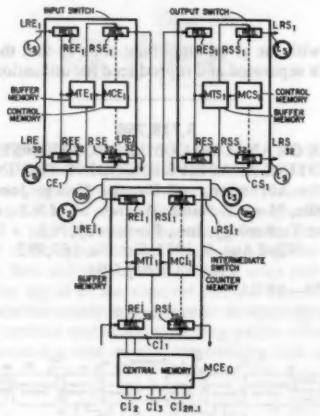
Jean-Baptiste Jacob, Saint-Quay-Perros, France, assignor to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, and Societe Lannionnaise D' Electronique Route de Perros-Guirec, Lannion, both of France

Filed June 29, 1970, Ser. No. 50,692

Claims priority, application France, June 27, 1969, 6921828

Int. Cl. H04q *11/04*

U.S. Cl. 179—18 J **8 Claims**



A path finding test device, more particularly for time switching, comprising input switches, intermediate switches and output switches, this device comprising a centralized memory representing the occupied or free state of all the intermediate switches so that the search for an available itinerary takes place by reading, in the memory, the free state of the intermediate switches.

The invention may be applied to the telecommunication industry.

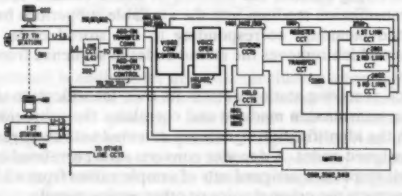
3,718,770
KEY TELEPHONE SYSTEM WIDEBAND CONFERENCING ARRANGEMENT

Randall Douglas Reese, Stanford, Calif., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 5, 1971, Ser. No. 169,329

Int. Cl. H04m *11/00, 3/56*

U.S. Cl. 179—18 BC **18 Claims**



Wideband conferencing service between stations served by a key telephone system intercom link is provided by a conference control circuit arranged to monitor the audio transmission from each station on a conference and to transmit wideband signals from a currently audioactive station to all other stations included in the conference. Wideband transmission from all other conference stations except from the last audioactive station is inhibited while the wideband transmission from the last audioactive station is transmitted to the currently audioactive station. In situations were two stations alternatively become audioactive, provision is made to ensure continuous uninterrupted bidirectional wideband transmission between those stations.

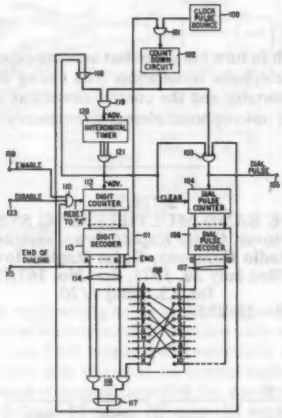
3,718,771
AUTOMATIC TELEPHONE CALLING APPARATUS UTILIZING DIGITAL LOGIC DEVICES

Gilbert Bank, Highland Park, N.J., assignor to National Midco Industries, Levittown, Pa.

Filed July 7, 1970, Ser. No. 52,934

Int. Cl. H04m *1/44*

U.S. Cl. 179—90 R **3 Claims**



An automatic telephone calling apparatus is disclosed in which a first counter counts dial pulses and a second counter counts the digits of a telephone number. A cross-wiring field permits the detection of coincidence between one of the outputs of each counter and one of the outputs of the other counter. When a coincidence is detected, the dial pulse counter is stopped at the desired number of dial pulses. An interdigital timer is then activated to time out a preselected interdigital interval. Thereafter, the dial pulse counter again begins to count dial pulses and again terminates when the particular count cross wired in the cross-wiring field is reached.

3,718,772
DYNAMIC EGG PRESENTATION

Clifford Sanctuary, Palos Verdes Estates, Calif., assignor to Del Mar Engineering Laboratories, Los Angeles, Calif.

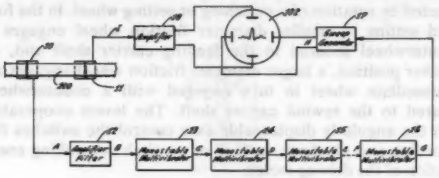
Filed Dec. 9, 1971, Ser. No. 206,485

Int. Cl. G11b *27/00, 31/00;* **A61b** *5/04*

U.S. Cl. 179—100.2 B **10 Claims**

A reproducing system for use as a high speed magnetic tape scanning instrument to provide for the superimposing of recurring signals such as ECG complexes on a visual indicator such as an oscilloscope from signals previously recorded for long time periods by a very slow single-track magnetic tape recorder. Trigger signals are developed from the reproduction by a first playback head of the ECG signals recorded on the

tape. The trigger signals are delayed a particular period to provide for control signals to control the activation of the oscilloscope sweep at the proper times to produce a stable superimposition of the ECG signals as reproduced by a second playback head spaced from the first playback head. The particular period of delay is provided electronically or electromechanically.

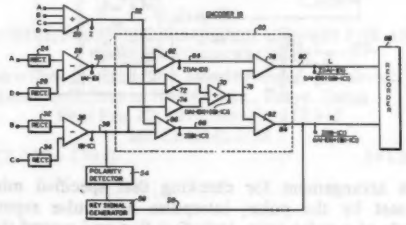


3,718,773

FOUR CHANNEL RECORDING AND REPRODUCING SYSTEM

Robert A. Berkovitz, Lexington, Mass., assignor to Russell D. Barnard, John Killion, Norman Dolph, and Peter F. Felfe, New York, N.Y., fractional part interest to each

Filed May 18, 1970, Ser. No. 38,084
Int. Cl. G11b *23/18*; H04h *5/00*; H01j *7/02*
U.S. Cl. 179—100.1 TD **22 Claims**



A method and apparatus for accurately reproducing in a first region a sound pattern representative of a sound pattern occuring in a second region comprising producing a first signal representing the total sound pressure at a point in the second region, a second signal representing the relative amount of sound energy flowing in a first path across the region and a third signal representing the relative amount of sound energy flowing in a second path across the region. The signals are combined to produce at least first and second output signals wherein the first output signal is directly proportional to the first and second signals and the second output signal is directly proportional to the first and third signals. Decoding is provided to decode the first and second output signals to produce the sound pattern in the first region.

3,718,774

INSTRUCTIONAL TAPE RECORDER FOR PREVENTING ERRONEOUS ERASURE ON A DOUBLE TRACK MAGNETIC TAPE USING TWO SENSING MEANS

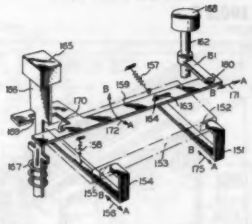
Masahiro Kosaka, Hirakota-shi Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Claims priority, application Japan, Aug. 21, 1969, 44/66983; Aug. 21, 1969, 44/66984
Filed Aug. 13, 1970, Ser. No. 63,485
Int. Cl. G11b *15/04*; G09b *5/04*
U.S. Cl. 179—100.2 D **3 Claims**

An instructional tape recorder comprises a recording and a reproducing means for recording and reproducing an instructional tape which has an instructional program recorded intermittently thereon and an oral response of a student made to said instructional program. Said instructional tape recorder can be used as a conventional tape recorder and as an instructional tape recorder by operating a selecting switch.

Said magnetic tape having said instructional program is protected from an erroneous erasure by detecting a break out lug made in the back edge of a tape case containing said magnetic tape.

Said magnetic tape is divided into two recording tracks, and each of which is used for recording and reproducing said instructional program and an oral response of a student.

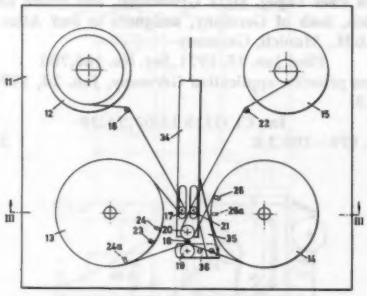


3,718,775

TAPE RECORDERS PROVIDING REPLAY WITHOUT STOPPING OR REWINDING

Paul Bernard Clements, Hove, Sussex, England, assignor to Words on Wheels Limited, London, England

Filed Aug. 7, 1970, Ser. No. 61,952
Claims priority, application Great Britain, Aug. 15, 1969, 40,958/69; Sept. 10, 1969, 44,686/69
Int. Cl. G11b *27/36, 21/12, 23/16*
U.S. Cl. 179—100.2 T **6 Claims**



A tape recorder particularly for use in language laboratories, with a facility for providing a replay of a short section, such as a phrase up to 15 seconds in length, without reversing the tape. This facility is achieved by providing a play head which is mounted in a spool over which the tape runs and which is adapted to drive against the advance direction of the tape to traverse the head back along the tape. In one form of the invention, the tape is stationary during replay and in a second form, the forward drive of the tape continues.

3,718,776

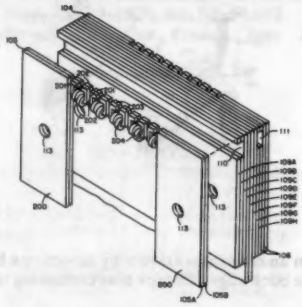
MULTI-TRACK OVERLAPPED-GAP MAGNETIC HEAD, ASSEMBLY

Geoffrey Bate; Robert H. Echelmeier, both of Boulder; Larry H. Everett; William D. Kehr, both of Longmont; Joseph E. Schaps, Boulder; Gerald Taylor, Longmont, and Richard F. M. Thornley, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 11, 1970, Ser. No. 97,208

Int. Cl. G11b *5/16*

U.S. Cl. 179—100.2 C **10 Claims**



A magnetic head reads and writes a plurality of information tracks, recorded as magnetization patterns on a magnetic recording medium, with two magnetic sheets mounted in a supporting frame. Complementary sheets each define a number of alternating three-sided and two-sided figures aligned along a subsequently formed head face. A gap-forming non-magnetic material is placed along one leg of each figure on one of the sheets, and the sheets are placed together, welded, encapsulated and ground to form a head. Preformed windings slip over one leg of each of the three-sided figures and preformed shielding cans surround the magnetic elements.

3,718,777

MAGNETIC TAPE RECORDER HAVING A FRICTION WHEEL DRIVE FOR THE TAPE REEL CARRIER SHAFTS

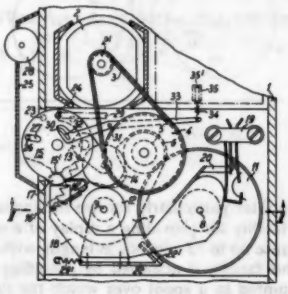
Manfred Paul Tupaj, 8031 Grobenzell, and Heinz Engert, 8 Munich, both of Germany, assignors to Sud Atlas Werke G.m.b.H., Munich, Germany

Filed Jan. 15, 1971, Ser. No. 106,780

Claims priority, application Germany, Jan. 24, 1970, P 20 03 154.3

Int. Cl. G11b *15/02, 15/28*

U.S. Cl. 179—100.2 R **3 Claims**



A pair of friction wheels are combined with a belt pulley to form a flywheel driven from a motor output shaft by resilient power transmission means. The friction wheels and the belt pulleys are rotatably mounted on a setting lever pivoted about the rewind carrier shaft and operated by an angularly displaceable cam in turn operated by a slide whose movement is effected by rotation of a switching or setting wheel. In the forward setting, a smaller diameter friction wheel engages a counterwheel secured to the feeding carrier shaft and, in another position, a larger diameter friction wheel engages an intermediate wheel in turn engaged with a counterwheel secured to the rewind carrier shaft. The levers cooperable with the angularly displaceable cam control the switches for recording and playback, as well as a switch controlling energization of the driving motor.

3,718,778

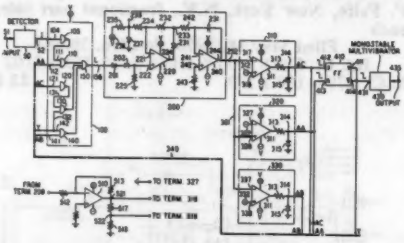
PULSE TRAIN CHECKING CIRCUIT

Peter Harold Anderson, Howell Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 23, 1971, Ser. No. 211,236

Int. Cl. H04l *25/02;* **H04m** *1/24*

U.S. Cl. 179—175.2 A **15 Claims**



An arrangement for checking that specified minima are met by the pulse, interpulse and pulse repetition periods of a pulse train, including first and second timing circuits normally operative during the interpulse and pulse periods respectively, for defining timing intervals corresponding to the respective minima specified therefor. Upon a satisfactory check of the interpulse period, the first timing circuit operates for a predetermined period corresponding to the difference between the specified repetition period minimum and the sum of the pulse and interpulse minima to inhibit the operation of the second timing circuit. The latter provides an output signal only if it "times out" before the pulse period has terminated, thereby indicating that all three minima have been met.

3,718,779

LOUDSPEAKER DIAPHRAGM HAVING MARGINAL AIR RELEASE PASSAGES AND CENTER HIGH FREQUENCY PROPAGATOR

Herbert Schoengold, Mount Vernon, N.Y., assignor to Electronic Research Associates, Inc., Cedar Grove, N.J.

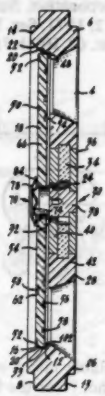
Original application July 22, 1967, Ser. No. 648,089. Divided and this application Oct. 29, 1970, Ser. No. 85,140

Int. Cl. H04r *1/24, 7/04, 9/06*

U.S. Cl. 179—115.5 R **10 Claims**

Sound reproducing equipment comprising a frame having a diaphragm supported at its peripheral edges by said frame. The diaphragm is preferably mounted on the frame in a manner to permit movement of the diaphragm as a complete entity at low frequencies. At the same time the diaphragm is provided with a high frequency propagator which cooperates with the voice coil and diaphragm to increase the range of the vibrations produced by the equip-

ment without introducing feed-back or distortional characteristics during operation. As a result the combination

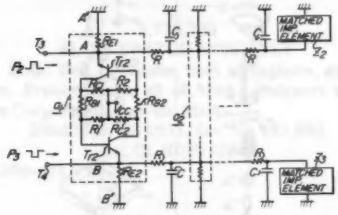


serves to extend the frequency response of the equipment and increase the fidelity of the sound reproduction.

3,718,780
ACTIVE PULSE TRANSMISSION CIRCUIT FOR AN INTEGRATED CIRCUIT

Yuichiro Oya, Kodaira, and Akio Hayasaka, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 23, 1971, Ser. No. 117,915
Int. Cl. H04b *3/38*
U.S. Cl. 179—170 G 14 Claims



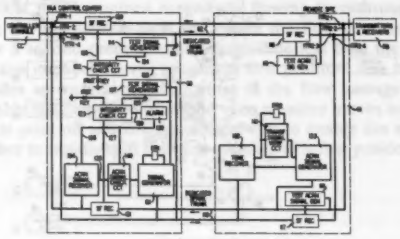
An active pulse transmission circuit for an integrated circuit comprising a plurality of T-shaped networks connected in series to each other, each having series input and output resistances and a parallel combination of a capacitance and a negative resistance device comprising two transistors cross-connected to each other and a plurality of resistances.

3,718,781
INTEGRITY CHECK EQUIPMENT FOR AUTOMATIC TRUNK SUBSTITUTION

Ronald Joseph Angner, Freehold, and Phillip Paul Daniele, Oceanport, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 30, 1971, Ser. No. 214,140
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.3 14 Claims

This specification discloses equipment for checking the integrity of trunk substitutions accomplished by circuitry which automatically tests trunks for defects that impair communications and then automatically substitutes a spare trunk for a defective trunk. The equipment includes check circuits for trunk substitution acknowledgment signals, coded multidigit trunk substitution control signals and further includes automatic test circuits for reattempting trunk substitution when an acknowledgement signal

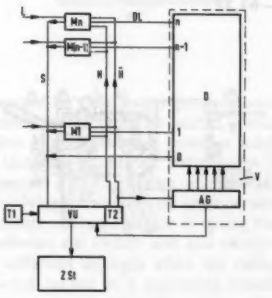


is not received to indicate a valid substitution. Circuitry is also disclosed for automatically indicating a trouble as a result of the automatic test procedures.

3,718,782
METHOD AND APPARATUS FOR DETECTING TERMINAL SIGNALS IN CENTRALLY CONTROLLED TELECOMMUNICATION INSTALLATIONS

Fritz Giebler, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 2, 1970, Ser. No. 94,435
Claims priority, application Germany, Dec. 9, 1969, P 19 61 752.8
Int. Cl. H04q *3/00*
U.S. Cl. 179—18 J 12 Claims



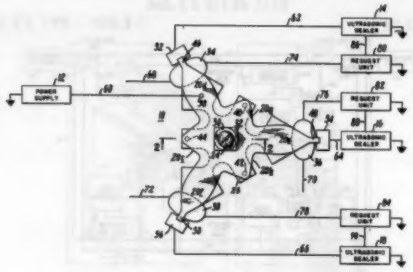
The duration of a terminal signal on a telecommunication line in a binary coded multiplex space division switching system is measured by counting synchronizing pulses occuring during receipt of the signal which has a known duration and polarity. A decentralized marker assigned to each line detects the first pulse. If a succeeding pulse is detected, a central counting stage is assigned to the line to determine if the requisite number of pulses to constitute a terminal signal are received, after which the central control terminates the connection.

3,718,783

SHARING APPARATUS AND SYSTEM

Miklos Kemenczky, Greenbrook, N.J., assignor to Paul Guilden, New York, N.Y.

Filed June 25, 1971, Ser. No. 156,838
Int. Cl. H01h *3/32*
U.S. Cl. 200—1 R 9 Claims



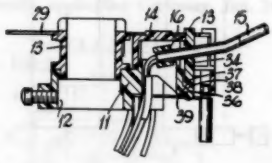
A plurality of switches is associated with a plate pivotally movable for selective operation of the switches. Plate pivotal movements are controlled by a like plurality of controllers inducing pivotal movement of the plate and associated pivotal movement limiting elements. The switches are operated by the plate in sequence according to the sequence in which the controllers are energized. In a time-sharing system, a time-shared device is connected to the plate and dependent elements are connected to the device through the switches.

3,718,784

VEHICLE DIRECTION SWITCH WITH AUTOMATIC RETURN AND HEADLIGHT DIMMER CONTROL

Norman Wilkinson, Barrowford, near Nelson, Lancashire, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed June 11, 1970, Ser. No. 45,490
Claims priority, application Great Britain, June 25, 1969, 32045/69
Int. Cl. H01h *21/00*
U.S. Cl. 200—61.27 9 Claims



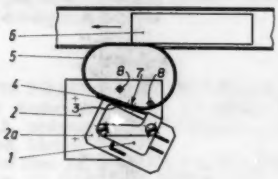
An electrical switch including a base having a rotor mounted for angular movement thereon. A first set of electrical contacts is operable by angular movement of the rotor relative to the base, and an operating lever is pivotally mounted on the rotor for movement relative to the rotor about an axis at right angles to the axis of movement of the rotor. The lever is coupled to a slider capable of sliding movement relative to the base, and further electrical contacts are operable by the slider in response to sliding movement thereof. The operating lever is coupled to the slider in such a manner that movement of the lever in a direction parallel to its pivot axis takes place relative to the slider, and so moves the rotor relative to the base to operate the first set of contacts.

3,718,785

MICROSWITCH WITH IMPROVED FLEXIBLE LOOP SENSING MEANS FOR DETECTING TRANSIENT OBJECTS

Hans Kudritzki, Berlin, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 2, 1971, Ser. No. 194,970
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.41 4 Claims



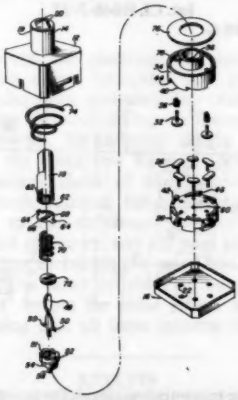
A commercially available micro switch is provided with a lever clamped at one end. Near the free end and the point of contact with the switch rod, there is mounted an annular loop consisting of a flexible material.

3,718,786

ROTARY SWITCH ASSEMBLY

Dominick Fila, Shelton, Conn., assignor to Tri-Line Electric Co., Inc.

Filed Aug. 5, 1971, Ser. No. 169,360
Int. Cl. H02h *19/58*
U.S. Cl. 200—63 10 Claims



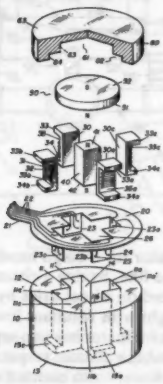
A multi-purpose switch assembly comprising a plurality of stationary contacts mounted in a base having a first set of circumferentially spaced ratchet-like surfaces thereon, a movable rotor carrying a pair of movable contacts adapted to engage the stationary contacts and including a second set of ratchet-like surfaces operatively associated with the first set of ratchet-like surfaces such that rotation effects axial movement of the rotor sufficient to separate the contacts with wiping and lifting action. The movable contacts biasingly engage the stationary contacts, and rotor rotation is effected by a spiral drive or rotating knob member operatively connected to the rotor. When the spiral drive is used, rotation is initiated through depression of a push button reciprocally mounted in a housing of the switch assembly.

3,718,787

MAGNETIC SETBACK-CENTRIFUGAL SWITCH

Seymour Levine, Dover, N.J., assignor to the United States of America as represented by the Secretary of the Army

Filed Dec. 4, 1971, Ser. No. 204,223
Int. Cl. H01h 35/10
U.S. Cl. 200—80 5 Claims



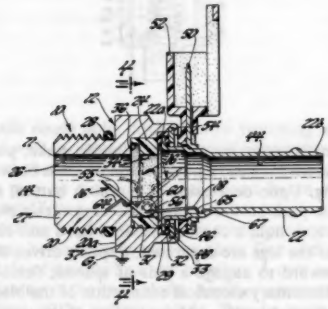
This invention relates to a magnetic setback-centrifugal switch for simultaneously closing a plurality of circuits in a spin stabilized projectile after it has been launched. The device utilizes a housing means, a printed circuit means operatively positioned in the housing, a fixed magnet means operatively positioned intermediate to the housing and the printed circuit means, and an inertial pole means magnetically held adjacent to the fixed magnet and slidably removable therefrom by the sequentially applied linear and angular accelerating forces caused by setback and spin of the projectile.

3,718,788

FLOW SWITCH ASSEMBLY

Alton A. Roth; Don L. Dzioba, both of Saginaw, and John F. Yonger, Frankenmuth, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 20, 1971, Ser. No. 181,883
Int. Cl. H01h 35/40
U.S. Cl. 200—81.9 R 3 Claims



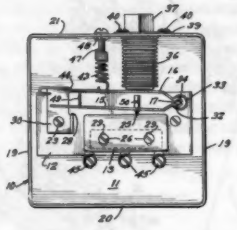
In a preferred form, this disclosure relates to a flow switch assembly comprising a housing means having a pair of hollow metal housing members which are insulated from each other and which define a flow passage therethrough. The assembly also includes a vane member which is pivotally supported for movement between first and second positions and a spring member which biases the vane member to its first position and normally has its opposite ends engaged with the metal members to provide a conductive path therebetween. The housing means has a recess which extends radially from the flow passage at a location between the first and second positions of the vane member. The vane member is moved from its first toward its second position in response to a fluid flow in excess of a first predetermined magnitude flowing therethrough to break the conductive path and, when the flow decreases to below a second predetermined magnitude less than the first, the vane member moves toward its first position. The recess provides an instantaneous increase in the flow passage area available for fluid flow when the vane member moves toward its first position and is aligned therewith to enable the spring member to rapidly shift the vane member to is first position.

3,718,789

PRESSURE SWITCH WITH OVERTRAVEL MEANS ON SWITCH ACTUATING ARM FOR MAINTAINING LOAD ON SWITCH DURING SMALL PRESSURE FLUCTUATIONS

Melvin S. Hook, La Salle, Ill., assignor to Burns Machine Co., Ottawa, Ill.

Filed April 15, 1971, Ser. No. 134,318
Int. Cl. H01h 35/32, 3/48
U.S. Cl. 200—83 R 2 Claims



Switch operated by fluid under pressure such as the pressure of pressurized lubricating oil used in lubricating an internal combustion engine or other pressure lubricated device. The switch includes a pivoted switch arm overlying and adapted to depress a switch button, and coaxially pivoted actuator arm overlying the switch arm and operated by an extensible fluid pressure operated device. A spring biased plunger is connected between the switch arm and switch button and is loaded with sufficient strength when the switch is closed to retain the switch button in a depressed actuated condition, upon surges in pressure in the pressure line.

3,718,790

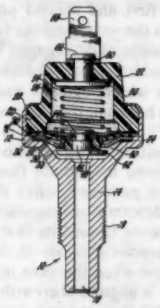
PRESSURE RESPONSIVE SWITCH

Donald J. Zelenka, Flushing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 4, 1971, Ser. No. 186,024
Int. Cl. H01h 35/34
U.S. Cl. 200—83 V 3 Claims

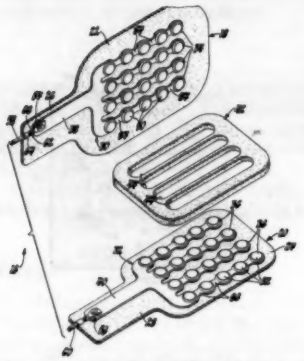
This invention relates to a normally open pressure respon-

sive electrical switch. Such a switch can be used in an automo-



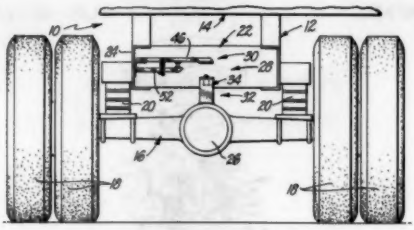
bile transmission as part of the transmission control spark advance systems presently found on automobiles.

3,718,791
PRESSURE RESPONSIVE SWITCH
Teofil Szablowski, Warren, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 16, 1971, Ser. No. 181,013
Int. Cl. H01h *3/02*
U.S. Cl. 200—85 A **11 Claims**



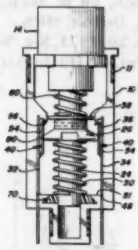
A normally open pressure responsive switch includes spaced first and second substantially planar members having opposed paddle-like configurations and composed of a dielectric generally flexible material such as plastic. First and second planar contacts of fork-like configurations are respectively laminated to the opposed faces of the planar members. The members and contacts are stamped to form depressions of frustoconical configuration. First and second terminals for connecting the switch to an electric circuit are respectively connected laterally spaced to handle portions of the contacts. The lateral spacing prevents engagement of the terminals and resultant closing of the switch. A resilient foam pad positioned between and adhesively bonded to the blade portions of the planar members includes a plurality of apertures of variable configuration whose opposite ends open to the tine portions of the respective contacts. The foam pad normally maintains a spaced relationship between the frustoconical apexes of the depressions respective the opposite ends of each aperture and deflects to allow engagement of these apexes and closing of the switch when the planar members are subjected to a normal pressure above a predetermined value.

3,718,792
OVERLOAD INDICATOR
Jack R. Stagner, 13708 Shaver, La Puente, Calif.
Filed May 12, 1972, Ser. No. 252,556
Int. Cl. H01h *3/14*
U.S. Cl. 200—85 R **13 Claims**



An overload indicator for a cargo handling vehicle, such as a truck, trailer, or the like, having a chassis mounting a cargo receiver and supported on wheel axles by springs which yield under the cargo weight with resultant lowering of the chassis toward the axles. The indicator has two separate parts to be attached to one axle and the chassis, respectively, in such a way that the chassis part lowers into contact with the axle part to actuate an overload signal upon loading of the vehicle to a predetermined cargo weight. The indicator is adjustable to vary the cargo weight at which the overload signal is actuated and is designated to avoid damage to the indicator in the event of deflection of the vehicle springs beyond the point at which the chassis part initially engages the axle part due to continued loading of the vehicle or bouncing of the vehicle chassis and axle in travel.

3,718,793
HIGH SPEED PUSH BUTTON SWITCH
Theodore J. Obszarny, Chicago, Ill., assignor to Guardian Manufacturing Company, Chicago, Ill.
Filed Aug. 9, 1971, Ser. No. 170,206
Int. Cl. H01h *15/18*
U.S. Cl. 200—160 **27 Claims**



A normally open, momentary, double make, push button contact switch includes a push button which is biased outward by a spring. Upon depression of the push button, a cam surface on the push button engages and separates a pair of flexible legs which hold a contact disc in a fixed non-circuit position. After the legs are separated, a spring drives the contact disc downward to engage a pair of spaced, flexible contact blades. Momentary electrical connection of the blades is provided by the passing disc. Upon release of the push button, a collar associated with the push button separates the contact blades so that the assembly may reassume its original, unactivated position without again making an electrical circuit.

3,718,794

ELECTRICAL SWITCH HAVING ANGULARLY ORIENTED RECTANGULAR CONTACTS

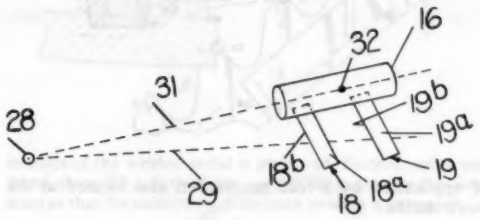
Steven John Tregurtha, Oswaldtwistle, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed March 1, 1972, Ser. No. 230,624

Claims priority, application Great Britain, March 5, 1971, 6,217/71

Int. Cl. H01h 9/00

U.S. Cl. 200—166 BB 4 Claims



An electrical switch in which pairs of fixed contacts are mounted in the switch body which supports a rotor carrying a roller contact for each pair of fixed contacts. Each of the fixed contacts is disposed at an acute angle to a line extending from a pivot axis of the rotor through that contact so that the portion of the surface of the roller which engages a fixed contact moves axially along the roller as the roller is moved angularly over the contact.

3,718,795

ELECTRIC SWITCHING CONSTRUCTION HAVING BARBED MEANS FOR LOCKING TOGETHER THE CASING PARTS THEREOF

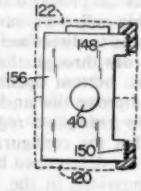
Arthur L. Good, Elkhart, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 781,307, Dec. 5, 1968, Pat. No. 3,576,416.

This application Jan. 22, 1971, Ser. No. 109,016

Int. Cl. H10h 9/02

U.S. Cl. 200—168 R 2 Claims



A versatile single pole, double throw switching mechanism is provided with two removable terminal connections to upper and lower stationary contacts. Either contact with its terminal connector may be removed and replaced by an electrically isolated "dead" stop member to produce a single pole, single throw switching mechanism. The vacancy produced by such removal may be covered by a cover plate. One of the stationary contacts is adjustable by a sew member. A cam member adjusts the flexing of the snap blade. Another screw member adjusts the bias of the actuator blade. Two or more switching mechanisms may be unitarily mounted side by side. The casing may be formed by two abutting casing cups. Barbed switch members hold the cup members together. A flat actuating plunger has dirt removing recesses.

3,718,796

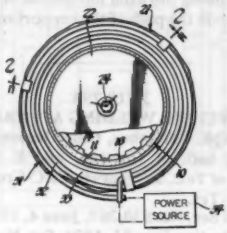
METHOD OF MANUFACTURING WAVED AND CONED FRICTION MATERIAL FACED FRICTION PLATES

Charles Schade, Speedway, and Jack F. Staley, Alexandria, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed March 3, 1972, Ser. No. 231,526

Int. Cl. H05b 5/00

U.S. Cl. 219—10.41 6 Claims



The waved or coned organic friction material faced steel plates are manufactured by stamping sheet steel to provide flat annular steel plates with spline teeth thereon. Then, while flat, organic annular friction material facings are adhesively bonded to the steel plates. The flat faced plate is clamped in a dielectric material stress intensifying fixture placed in a high frequency concentrating induction heating coil with an annular intensifier plate aligned with the outer edge of the steel friction plate to concentrate the heat at the outer edge of the annular friction plate. The coil is briefly energized by an induction heater generator to provide concentrated heating at the adjacent edge of the friction plate to induce a high radial temperature gradient in the steel plate without excessively heating the facing or the adhesive bond to cause impairment. If the intensifier fixture contacts and restrains both sides of the friction plate uniformly about the inner portion of its perimeter, a coned plate is formed. If the intensifier clamping fixture engages one plate in face relation and the other at peripherally spaced portions, a waved plate is formed.

3,718,797

LAPPING MACHINE FOR THE PRODUCTION OF REINFORCEMENT BASKETS WITH BELL SLEEVE

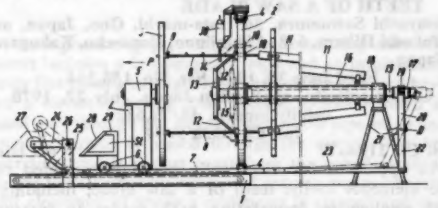
Georg Pfender, Kisslegg, Germany, assignor to Firma Wehrle-Werk AG., Emmendingen, Germany

Filed Feb. 22, 1971, Ser. No. 117,320

Claims priority, application Germany, Feb. 21, 1970, P 20 08 095.9; Feb. 21, 1970, P 20 08 094.8; March 26, 1970, P 20 14 719.7

Int. Cl. B23k 9/00

U.S. Cl. 219—56 13 Claims



A lapping machine for the production of reinforcement baskets with a bell sleeve for concrete pipes and the like,

which comprises longitudinal rods and an armament wire wound about the longitudinal rod. Two synchronously driven driver disks for holding and guiding, respectively, are provided. One of the disks is longitudinally displaceable in a machine frame and support the ends of the longitudinal rods. The other of the disks is immovable and axially guides the longitudinal rods. Radially adjustable guide means are pivotally connected to radial arms of a central holding disk. The arms extend along a conical jacket, so that an axial movement of the holding disk results in a simultaneus radial displacement of the guide means for the longitudinal rods and means are arranged for controlling the axial movement of the holding disk in dependency upon the path of the supporting disk.

3,718,798

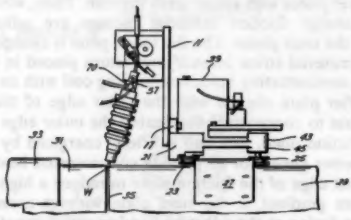
TRAVELING WELDING APPARATUS

James B. Randolph, Columbus, Ohio; Jerome W. Nelson; Joe R. Paysinger, both of Houston, and E. Eugene Crump, Richmond, all of Tex., assignors to CRC-Crose International, Inc., Houston, Tex.

Continuation of Ser. No. 830,369, June 4, 1969, abandoned. This application June 21, 1971, Ser. No. 155,320

Int. Cl. B23k *9/02*

U.S. Cl. 219—60 A **10 Claims**



A welding apparatus adapted to travel along a predetermined path, form a weld along such path, includes a welding head, means for mounting the head on a traveling carriage, means for supplying electrode material to said head, and means for continuously and/or occasionally changing the alignment and/or angular position of the head with respect to the work being welded in order to apply molten electrode material in a variable pattern and/or at variable angles of projection.

3,718,799

APPARATUS FOR ELECTRICALLY BONDING CEMENTED CARBIDE ELEMENTS TO THE TEETH OF A SAW BLADE

Mitsuyoshi Sawamura, 56 Hata-machi, Ono, Japan, and Takeshi Hihara, 6–8–4 Shinjinno, Jinno-cho, Kakogawa, Japan

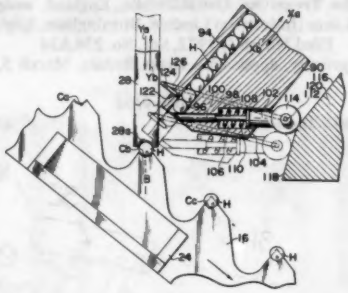
Filed June 30, 1971, Ser. No. 158,264

Claims priority, application Japan, July 22, 1970 (utility model), 45/72,632

Int. Cl. B23k *9/04*

U.S. Cl. 219—77 **6 Claims**

An apparatus for electrically bonding cemented carbide elements to the teeth of a saw blade, including a feed mechanism cooperating with guides to intermittently advance the saw blade past a work station. A releasable holding mechanism holds the blade at the work station and serves as a stationary electrode which cooperates with another movable electrode to bond the carbide elements into recesses in the blade teeth. The carbide elements are individually presented to the point



of application by a feed mechanism also located at the work station.

3,718,800

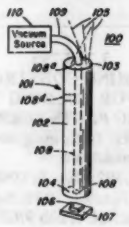
INFRARED HEATING APPARATUS

Bernard J. Costello, Ringoes, N.J., assignor to Argus Engineering Company, Inc., Hopewell, N.J.

Original application Mar. 5, 1968, Ser. No. 710,546, now Patent No. 3,522,407, dated Aug. 4, 1970. Divided and this application Mar. 20, 1970, Ser. No. 24,963

Int. Cl. B23k *1/04;* **G02b** *5/14*

U.S. Cl. 219—85 **1 Claim**



Apparatus employed in conjunction with a radiation source for heating or soldering electronic components wherein the apparatus is provided with one or more chambers having highly reflective surfaces aligned relative to one another so as to direct radiation entering into the chamber downwardly through the chamber so as to be emitted through the bottom opening of the chamber and thereby greatly improve the uniformity of distribution of the radiation to irradiate a region of a workpiece being soldered such that the configuration of the irradiated region is exclusively determined by the configuration of the exit opening provided in the reflective chamber. The structure comprising the chamber may also be employed to hold and accurately position the electronic component as well as masking the component from radiation and hence undue heating.

3,718,801

ARC STARTING STUD WELDING METHOD

Hideyuki Yoshida, Amagasaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed April 12, 1971, Ser. No. 133,010

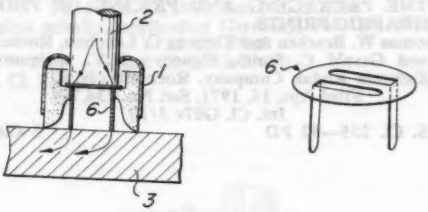
Claims priority, application Japan, April 17, 1970, 45/33231

Int. Cl. B23k *9/20*

U.S. Cl. 219—99 **1 Claim**

An arc stud welding method providing a metal piece between a stud and a base metal for generating an arc and for

deoxidation so as to improve the arc generation effect while protecting the arc from the atmosphere whereby the characteristics of the welded metal is improved. Further, using said metal piece the length of the arc can be maintained as constant so that the uniformity of the stud welding is improved.



3,718,802

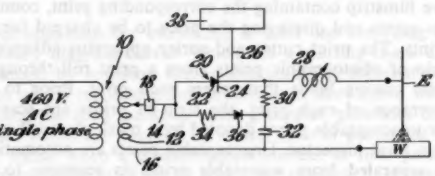
RIPPLE CONTROL FOR ELECTRIC ARC WELDING POWER SUPPLY APPARATUS

August Frederick Manz, Union, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed June 30, 1971, Ser. No. 158,395

Int. Cl. B23k 9/10

U.S. Cl. 219—131 WR **4 Claims**



Power supply apparatus for producing a continuous ripple direct current comprising a single phase A.C. source of power, a series connected parallel network consisting of a variable inductor in parallel with a series connected resistor and capacitor, a silicon controlled rectifier interposed between the power source and the parallel network and charging means for charging the capacitor during the positive half-cycle of alternating input current.

3,718,803

APPARATUS AND METHOD FOR FABRICATING A CONTAINER

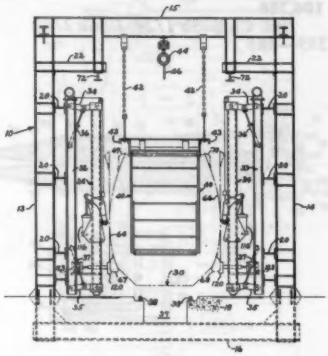
William R. Evans, Florissant, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed June 9, 1971, Ser. No. 151,395

Int. Cl. B21j ; B23k 31/02; B21d 7/02

U.S. Cl. 219—158 **36 Claims**

Apparatus and method for folding railway hopper car sides in a curved relation about transverse bulkheads for welding by welders supported on collapsible scaffolds within the hopper car, which also hold the bulkheads in position for welding. Rollers are mounted on carriages on vertical frames and the height of each carriage is manually controlled by the welder. The rollers are positioned on the outer surface of the car sides directly opposite the position along the bulkheads being welded. The rollers exert pressure against the car sides to press the car sides tightly against the curved bulkheads when the bulkheads are being welded to the sides.



3,718,804

FIXING HEAT-GENERATING PIPE UTILIZING SKIN EFFECT CURRENT

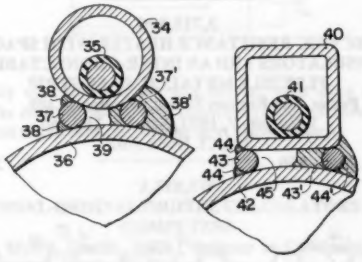
Masao Ando, Kohokuku, Yokohamashi, Japan, assignor to Chisso Corporation, Osaka, Japan

Filed July 2, 1971, Ser. No. 159,398

Claims priority, application Japan, July 16, 1970, 45/62239

Int. Cl. H05b 3/00

U.S. Cl. 219—301 **6 Claims**

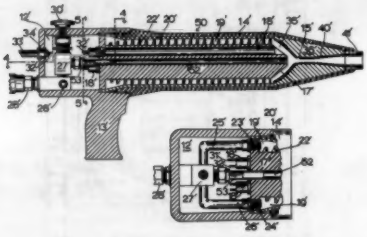


A heat-generating pipe arrangement utilizing skin effect current includes a ferromagnetic pipe and an insulated conductor line passing through the interior of the pipe and having such a circuit therewith that current is concentrated and passed only through the inner surface of the pipe when an alternating current is passed through the circuit. The heat-generating pipe is spaced apart from the outside wall of a pipeline to be heated by interposed spacing means whereby a small clearance of about a millimeter is created and maintained over the entire length of the ferromagnetic pipe to protect the pipeline from being damaged by a possible arc in the event of a failure of the insulation on the conductor inside the ferromagnetic pipe.

3,718,805
HEATED FLUID GUN

Eldridge D. Posey, 411 Rushwood Drive, Murfreesboro, Tenn. 37130

Original application Nov. 12, 1969, Ser. No. 875,898. Divided and this application Jan. 13, 1971, Ser. No. 106,266
Int. Cl. B05b 1/24; H05b 1/00
U.S. Cl. 219—305 3 Claims

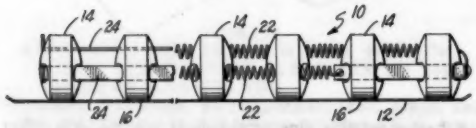


A portable gun housing including an elongated heat-conductive core through which is formed a central elongated straight central fluid passage surrounded by a helical fluid passage and with both fluid passages communicating with a discharge orifice in the front of the housing. At least one elongated electrical heating element extends longitudinally through the core between the straight fluid passage and the helical fluid passage, and an electrical supply conduit is provided for energizing the heating element. A control valve located within the breech or rear chamber of the housing has an inlet connected to a fluid supply conduit and outlets connected to the fluid passages. The valve has a closed position wherein fluid is directed solely to the helical passage, a fully open position wherein the fluid is directed substantially solely through the straight passage and variable intermediate positions between the closed and open positions wherein fluid is directed simultaneously through both passages in proportionate amounts corresponding to the intermediate position.

3,718,806
ELECTRIC RESISTANCE HEATER WITH SPACED INSULATORS AND AN INTER-CONNECTABLE FLEXIBLE METALLIC BASE STRIP

Paul H. Potter, 544 Fantasy Street, Palmdale, Calif.

Filed July 7, 1971, Ser. No. 160,467
Int. Cl. H05b 3/02
U.S. Cl. 219—550 2 Claims

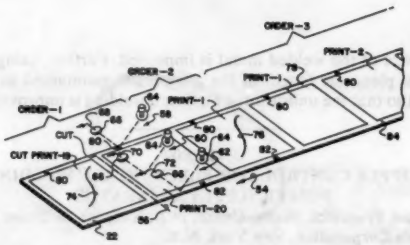


An electric heater comprising a flexible base strip, insulators spaced apart along and having flats seated on one side of the base strip, each insulator being provided intermediate its ends with an aperture generally perpendicular to and having an end adjacent the base strip, each of the insulators being provided between the aperture and the respective ends of the insulator with shoulders which extend to the aperture and which face away from the base strip, the base strip having two integral prongs within the aperture of each insulator and respectively bent toward opposite ends of such insulator over the shoulders thereof to secure same to the base strip, and electrical resistance elements threaded through openings in the insulators.

3,718,807
METHOD AND APPARATUS FOR FACILITATING THE PACKAGING AND PRICING OF PHOTOGRAPHIC PRINTS

Thomas W. Bracken and Thomas C. Laughon, Rochester, and Gerald C. Smith, Honeoye, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 16, 1971, Ser. No. 134,786
Int. Cl. G07c 3/10
U.S. Cl. 235—92 PD 5 Claims



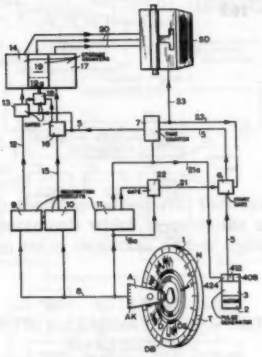
A finishing operations workcenter includes apparatus for cutting and sorting prints, cutting and stacking negative filmstrips, correlating "marked" prints with the negative filmstrip containing the corresponding print, counting the prints and displaying the price to be charged for the prints. The print cutter and sorter apparatus advances a strip of photographic prints from a print roll through a print cutting blade that severs each print. Prior to the severance of each print, the strip of prints are scanned for unacceptable prints denoted by a mark placed thereon by a print inspector. Unacceptable prints are automatically separated from acceptable prints in response to the detector marks. Simultaneously, the negative filmstrip of each customer order of prints is cut into a number of predetermined lengths and stacked in a predetermined manner by the automatic filmstrip cutting and stacking apparatus. A marked print is correlated with the negative filmstrip in the stack that contains the corresponding negative. Furthermore, the total number of prints made from each customer's order is counted and displayed on the price display apparatus which also indicates the price to be charged for printing the customer order. When the last of each customer's order of prints and negative filmstrips are cut, the respective cutting apparatus cease operation. The operator of the finishing operations workcenter gathers the acceptable prints, inserts them into an envelope obtained from an envelope dispenser, removes the stacked negative filmstrips from the print cutting apparatus, inserts the negative filmstrips into the envelope, notes the price displayed by the automatic print counting and price display apparatus and marks the envelope with the indicated price. When marked prints have been detected, the operator separates the marked prints and corresponding negative filmstrips, inserts the good prints and negative filmstrips into the envelope and attaches the marked prints and corresponding negative filmstrips to the envelope. These orders are set aside for reprinting. Upon the removal of the stack of negative filmstrips from the automatic film cutting and stacking apparatus, the print counter and the correlator display are reset and the print and film cutting apparatus are energized to cut the next customer order of prints and negative filmstrips.

3,718,808

APPARATUS FOR TIME-DEPENDING EVALUATION OF A DIAGRAM CARRIER

Heinz Kelch, Buchenberg, and Siegfried Spauszus, Villingen, Germany, assignors to Kienzle Apparate G.m.b.H., Villingen, Germany

Filed Feb. 22, 1972, Ser. No. 227,738
Claims priority, application Germany, Feb. 19, 1971, P 21 07 976.5
Int. Cl. G06k 11/00
U.S. Cl. 235—92 T 21 Claims



An apparatus for evaluating at least one recording on a rotary diagram carrier which has a starting mark and is sensed by scanning means distinguishing different sections of the recording, and producing a start signal when sensing the start mark. A pulse generator generates time pulses which are counted by a time counter producing an end signal when a predetermined number of time pulses, corresponding to 24, or 12 hours, for example, is counted. While sensing the different sections of the recording, the scanning means transmit different signals representing the respective sections of the recording, to distributing gates which permit the passage of corresponding numbers of time pulses to different storage counters which are separately read out when the end signal is produced after 24, or 12 hours, for example.

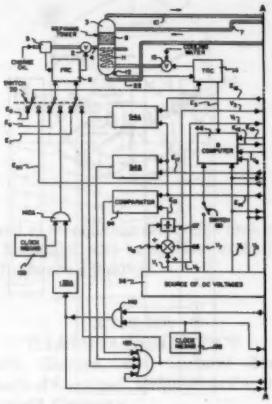
3,718,809

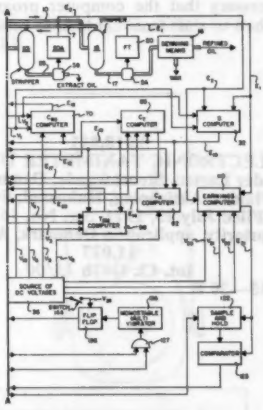
MEANS AND METHOD FOR CONTROLLING A SOLVENT REFINING UNIT TO PROVIDE OPTIMUM YIELDS OF REFINED OIL AND EXTRACT OIL

Robert A. Woodle, Port Arthur, Tex., assignor to Texaco Inc., New York, N.Y.

Filed April 21, 1971, Ser. No. 136,003
Int. Cl. G06g 7/58; C10g 21/00
U.S. Cl. 235—151.12 12 Claims

A solvent refining unit is initially operated at a predetermined solvent dosage and a predetermined extract-mix temperature to yield refined oil of a desired quality from charge oil. A quality constant is determined from the initial operation of the refining unit. Limitations on a selectivity characteristic of the solvent, defining an area of feasible operation, are determined from various maximum operating characteristics and equations, hereinafter disclosed. The charge oil flow rate is repeatedly increased in a stepping fashion and an actual solvent selectivity characteristic for each step is calculated using the solvent dosage and the quality constant. An earnings position for the refining unit is determined for each step. When the earnings position for a current step is less than the earnings position for the previous step, or when the actual solvent selectivity characteristic for the current step does not lie within the area of feasible operation, the charge oil flow rate is decreased to the flow rate for the next previous step.





3,718,810

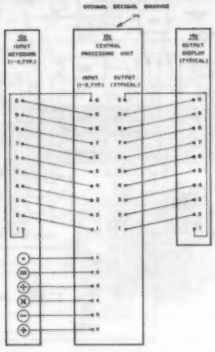
CARDINAL-ORDINAL DIGITAL CALCULATORS AND COMPUTERS

Paul K. Myers, Seattle, Wash., assignor to Cardinal-Ordinal Corporation, Seattle, Wash.

Filed July 29, 1971, Ser. No. 167,387
Int. Cl. G06f 7/38, 3/00
U.S. Cl. 235—156 26 Claims

A calculator comprising a conventional cardinal calculator having an input keyboard unit, a central processing unit input and output, and an output display unit wherein the connections on the central processing unit input from all terminals on the input keyboard unit are shifted down to that of the next lower numeral in the central processing unit input. The connections on the output display unit from all terminals on the central processing unit output are shifted up to that of the next upper numeral in the output display unit resulting in an ordinal calculator for producing an ordinal number sum, difference, product, or quotient answer from an input and subsequent computation of two ordinal numbers. With the addition of a gang switch for shifting all these connections by one terminal, a cardinal-ordinal calculator results for utilizing

either or both cardinal and ordinal numbers. Two modifications of the ordinal calculator and two modifications of the cardinal-ordinal calculator are disclosed. For computer use it



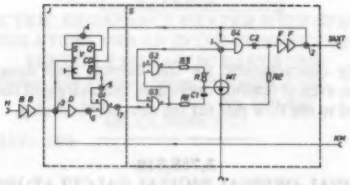
is only necessary that the computer program instruct the operator when to shift from cardinal to ordinal operation or vice versa.

3,718,811

ELECTRONIC TAXIMETER DEVICE

Carl Ib Peder Larsen, Stenstuegade, Denmark, assignor to Haldex Aktiebolag, Halmstad, Sweden

Filed July 23, 1971, Ser. No. 165,039
Claims priority, application Denmark, Aug. 12, 1970, 11,027
Int. Cl. G07b *13/00*
U.S. Cl. 235—30 R **4 Claims**



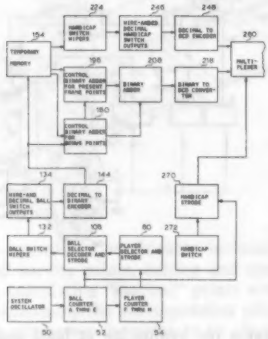
An electronic taximeter comprising circuitry for generation of a single pulse train by an oscillating means constructed so as to emit oscillations in the form of constant frequency pulses applied to charge counter means when the speed of the taximeter carrying vehicle is below a predetermined value, and to emit speedometer governed pulses, obtained by a synchronizing process involving speedometer sensor means feeding triggering pulses to the above-mentioned oscillating means, when the vehicle speed is above the aforementioned value. The pulses are hereby received at a constant rate below this speed and at a variable rate above this speed, and comprise a certain number of pulses per travelled distance applied to the same charge counter means. The electronic circuitry merely changes automatically, and without any pulse loss, the rate of the pulse train applied to the charge counter means and establishes, with reference to the predetermined speed, a time dependent fare below and a distance dependent fare above this speed.

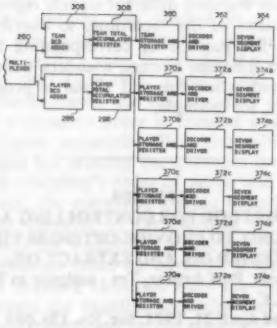
3,718,812

BOWLING SCORE COMPUTER

Herman L. Tillman, 2626 N.E. 49th Street, Plantation, Fla., and Ralph E. Booth, 691 N.W. 65th Avenue, Fort Lauderdale, Fla.

Filed June 14, 1971, Ser. No. 152,833
Int. Cl. G06f *7/50, 15/20;* A63d *5/04*
U.S. Cl. 235—168 **9 Claims**





A bowling score computer system having manual input of pinfall data via thumb-wheel switches. The switches are sequentially scanned to derive data for use by a solid-state electronic computer to derive individual and team scores. At regular periodical intervals, the switches are rescanned to derive up-to-date output values in case the output should be changed. The system has the capability of operating in a handicap mode or in a scratch mode. The input switches serve as an input storage memory and eliminate the need for most other internal memory within the system.

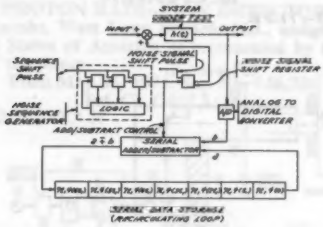
3,718,813
TECHNIQUE FOR CORRELATION METHOD OF DETERMINING SYSTEM IMPULSE RESPONSE

Olin A. Williams, Jr., 4480 Lashaly Drive, Tucker, Ga. 30084, and John B. Peatman, Georgia Tech, Atlanta, Ga. 30302

Continuation-in-part of abandoned application Ser. No. 47,502, June 18, 1970. This application Jan. 19, 1972, Ser. No. 218,981

Int. Cl. G06f 7/19; G01r 27/28

U.S. Cl. 235—181 9 Claims



Improved method for making real time system impulse response measurements which involves the use of binary pseudo-random noise sequences as test signals.

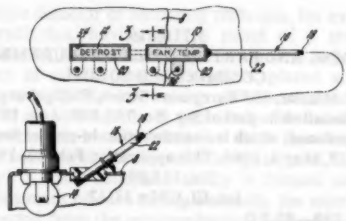
3,718,814
FIBER OPTIC ILLUMINATOR AND METHOD OF MAKING SAME

Allan S. Van Slyke, Southington, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed March 27, 1972, Ser. No. 238,457

Int. Cl. B60q 3/04

U.S. Cl. 240—8.16 4 Claims



A conventional fiber optic light conductor comprising a bundle of filaments arranged in a generally circular cross-section and covered with an opaque jacket, has a portion thereof formed into a flat large area illuminator emitting light laterally of the axis of the bundle by removing the jacket from the portion of the bundle where the illuminator is desired, spreading the filaments out into a flat array and securing the filaments to a flat retaining member. The low index of refraction coating of the filaments is at least partially disrupted to allow escape of light laterally from the filaments.

3,718,815
PHOTOGRAPHIC FLASHLAMP UNIT WITH FLASHED LAMP INDICATOR AND METHOD OF MAKING SAME

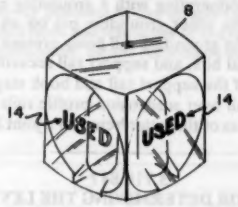
Thomas B. McDonough, Allenwood, and John W. Shaffer, Williamsport, both of Pa., assignors to GTE Sylvania Incorporated

Filed March 9, 1971, Ser. No. 122,454

Int. Cl. F21k 5/02; G03b 15/02

U.S. Cl. 240—1.3 11 Claims

A flashcube having a flashed lamp indicator comprising a spot of dried paste composed of blue powder, a meltable red dye, a meltable organic compound which in the molten state functions as a solvent for the dye, and a binding resin. The



paste is prepared as an aqueous dispersion and, in the process of making the flashcube, may be applied on the inside surface of each of the flashcube windows.

3,718,816
ILLUMINATION DEVICE

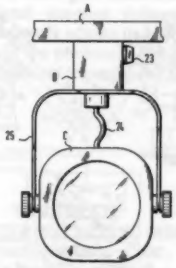
Heinz Seelbach, Kierspe, and Gerhard Eversberg, Ludenscheid, both of Germany, assignors to FA. Reininghaus & Co., Ludenscheid, Germany

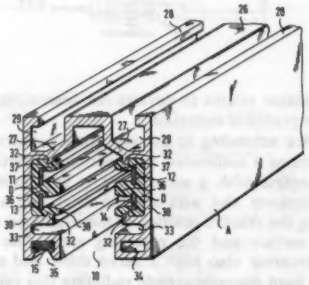
Filed June 17, 1971, Ser. No. 153,980

Claims priority, application Germany, June 18, 1970, G 70 22 809.0

Int. Cl. F21v 21/00; H01r 13/00

U.S. Cl. 240—52 R 6 Claims





An illumination device comprising a support rail, a terminal box insertable therein, and receiving on both sides therein a conduit rail carrier having a plurality of electrical conduit rails. A plurality of spring holding and contact-tongues in the terminal box, operatively cooperating with said conduit rails. A pole contact tongue cooperates in one of the insert positions of the terminal box with a pole conduit of one current circuit of one of the conduit rail carriers of one current circuit, while in another insert position turned 180° relative to the first insert

position cooperating with the pole conduit of the other current circuit of the other of the conduit rail carriers. The terminal box has in each insert position one grounding pin of two grounding pins cooperating with a grounding rail of the support rail, while the other grounding pin on an opposite side being free from the grounding rail being pressed into the housing of the terminal box, and support rail securing means for a direct securing of the support rail and hook stays for securing of the support rail over suspension profile rails with securing engagement planes of the latter being on a joint level.

3,718,817

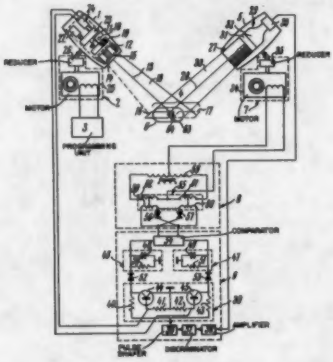
DEVICE FOR DETERMINING THE LEVEL AND SURFACE PROFILE OF MATERIALS UTILIZING HARD RADIATION

Vadim Nikolaevich Afanasiev, Bolotnikovskaya ulitsa, 40, korpus 4, kv. 23, Moscow; Jury Pavlovich Belyaev, ulitsa Sechenova, 58, kv. 30, Zhdanov; Vladimir Olegovich Gaiduchik, Mariupolskaya ulitsa, 4, kv. 47, Moscow; Pavel Lukich Gruzin, polschad Pryamikova, 6, kv. 21, Moscow; Nikolai Alexandrovich Konkin, Aviamotornaya ulitsa, 49/1, kv. 102, Moscow; Valery Vasilievich Megarsky, Verkhnaya Pervomaiskaya ulitsa, 24/17, kv. 17, Moscow; Boris Nikolaevich Okunev, ulitsa zol i Alexandra Kos-modemyanskikh, 35/1, kv. 19, Moscow, and Jury Alexandrovich Trokin, Baikalskaya ulitsa, 40/17, kv. 70, Moscow, all of U.S.S.R.

Filed Nov. 27, 1970, Ser. No. 93,280

Int. Cl. G01n *21/24*

U.S. Cl. 250—43.5 FL **2 Claims**



The invention relates to devices for determining the level and surface profile of materials.

The device according to the invention is characterized in that it contains a collimated hard electromagnetic radiation source complete with a servo drive, a collimated reflected radiation reciever also with a servo drive and a means for determining the relative position of the irradiated zone on the inspected surface and the receiving zone. The collimated radiation receiver also with a servo drive and a means for tion of the hard electromagnetic radiation flux relative to the axis of collimation. The means for determining the relative position of the irradiated and receiving zones comprises a phase detector which is electrically connected to the means for periodically varying the position of the radiation flux and serves to route the signal coming from the collimated radiation receiver in accordance with the phase of the control signal coming from the means for periodically varying the position of the radiation flux, and at least two integrating networks which are electrically connected to the phase detector and each of which accepts the signal from the phase detector in accordance with the phase of the control signal.

3,718,818

MEASURING CERENKOV RADIATION PRODUCED BY CHARGED PARTICLES PASSING THROUGH A GAS AS INDICATIVE OF THE ENERGY OF THE CHARGED PARTICLES

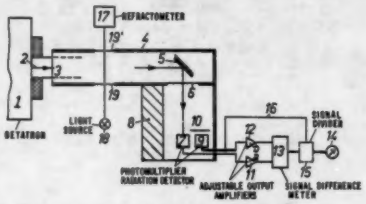
Arnold von Arx, Olten, and Klaus Kuphal, Staretschwil, both of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Sept. 24, 1970, Ser. No. 75,147

Claims priority, application Switzerland, Sept. 29, 1969, 14624/69

Int. Cl. G01t *1/20*

U.S. Cl. 250—71.5 R **2 Claims**



A device for determining the energy of electrically charged particles emanating from a particle accelerator such as a Betatron used for radiation therapy includes a gas interval traversed by the accelerated particles for producing a Cerenkov radiation whose optical index of refraction is variable. First and second adjacently located detectors are disposed in the path of Cerenkov radiation, both of these detectors being exposed to the same dispersed and secondary particle radiation but one detector being shielded from the direct Cerenkov radiation. The respective outputs from the detectors are led through amplifiers whose amplification factors are adjustable into a difference meter, and the output of the difference meter is applied to a measuring instrument.

3,718,819

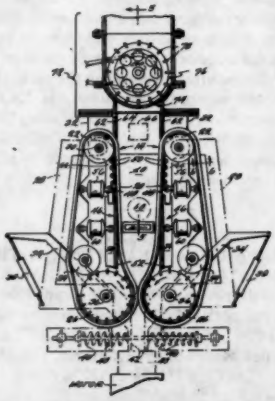
FEEDING AND PARTICLE SIZE MEASUREMENT OF COMMINUTED SOLIDS

Frank J. Miksitz, 603 Barrymore Street, Phillipsburgh, N.J.

Continuation-in-part of Ser. No. 753,505, Aug. 19, 1968, abandoned, which is a continuation-in-part of Ser. No. 547,627, May 4, 1966. This application Feb. 12, 1971, Ser. No. 115,051

Int. Cl. G01n *23/12*

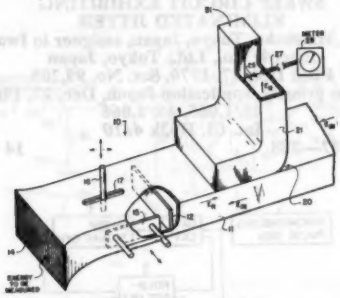
U.S. Cl. 250—43.5 D **12 Claims**



This invention relates to the feeding and analysis of particulate material and in particular to (1) the feeding of such

materials at controlled rates, (2) the continuous dynamic measurement of particle size and other properties of the material being conveyed and (3) the provision of a chemical processing environment through which the material is conveyed under controlled conditions.

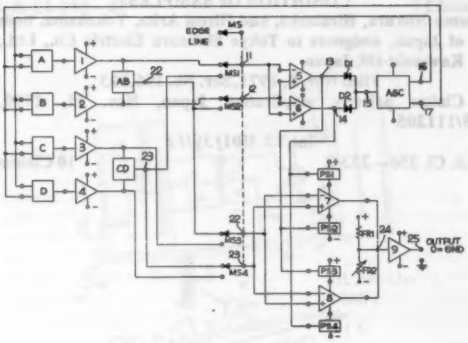
3,718,820
PHOTON RADIATION DETECTOR
Harold Jacobs, West Long Branch, N.J., assignor to the United States of America as represented by the Secretary of the Army
Filed May 25, 1971, Ser. No. 146,766
Int. Cl. G01f *1/16*
U.S. Cl. 250—83.3 H **17 Claims**



A sensitive detector of incoming radiation, for example, infrared radiation, having a thin panel of a semiconductor material, the conductivity of which is a function of intensity of said incoming radiation, placed across a microwave waveguide into which microwave energy is supplied. If the waveguide is provided with tuning elements to control both attenuation and line-length in the region between the semiconductor panel and a microwave short, a lossy reflection cavity is formed and, by proper adjustment of said tuning elements, the microwave power reflected from the semiconductor panel and coupled through a directional coupler to an indicating device can be minimized. Conductivity changes in the semiconductor material resulting from exposure to said incoming radiation cause corresponding changes in the reflected electric field to occur which is proportional to the conductivity, and the consequent change in reflected power propagating through the directional coupler can be detected by conventional microwave detecting means and supplied to an indicating device calibrated to read intensity of the incoming radiation.

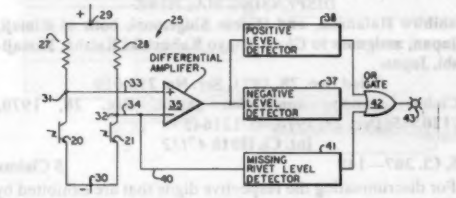
3,718,821
AUTOMATICALLY ADJUSTING PHOTOELECTRIC POSITION DETECTOR
George Vischulis, W172 N9409 Shady Lane, Menomonee Falls, Wis.
Filed Oct. 29, 1971, Ser. No. 193,822
Int. Cl. G06k *11/02*
U.S. Cl. 250—202 **43 Claims**

A photoelectric position detector for a line or edge target provides an output of the same polarity when the target deviates in a given direction from the reference position regardless of whether the target is a left edge or a right edge or a line and irrespective of the orientation of the high reflectivity and low reflectivity portions of the target. Optic fibers transmit light reflected from discrete areas of the target to a plurality of detector photocells, means responsive to the output of at



least two photocells derive a contrast signal proportional to the relative intensity of light reflected from different areas of the target, and an automatic gain control amplifier responsive to the contrast signal supplies voltage to the detector photocells and continuously adjusts its gain to a constant value so that the response of the photocells for a given target deviation is substantially constant regardless of target contrast.

3,718,822
RIVET CENTER DETECTING MECHANISM
Larry B. Pascoe, National City, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.
Filed April 23, 1971, Ser. No. 136,771
Int. Cl. G06m *7/00*; H01j *39/12*
U.S. Cl. 250—210 **7 Claims**



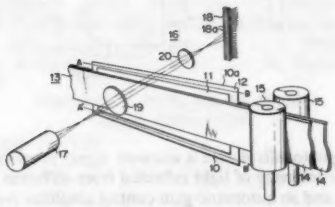
To determine whether or not a rivet has been delivered to, and is properly centered between, the rivet holding fingers of an automatic riveting machine, a light beam is directed from a light source on one side of a selected rivet position, past such selected position toward two photocells, so positioned that both photocells are fully exposed to the beam when the fingers are empty; both photocells are shielded equally from the beam when a rivet is held in properly centered position between the

fingers; and one of the photocells is exposed to the beam to a greater degree than the other when a rivet is in improperly centered position between the fingers. The photocells are embodied in a bridged circuit having three detectors responsive thereto, the detectors being actuated selectively according to the relatively illuminated condition of the photocells.

3,718,823
OPTICAL DETECTORS FOR INSPECTING THE CONDITION OF SAMPLES

Isamu Niikura, Hiratsuka, and Hirosi Arita, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Nov. 8, 1971, Ser. No. 196,293
Claims priority, application Japan, Nov. 11, 1970, 45/111205
Int. Cl. H01j *39/12*
U.S. Cl. 250—223 R **10 Claims**



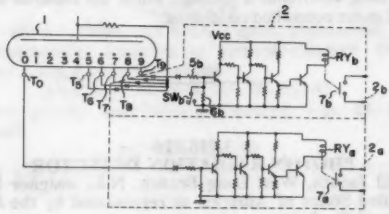
To inspect the condition of a sample, for example a paper money, there are provided a conveyor for successively conveying the sample along a predetermined path; optical means including a source of light disposed on one side of the conveyor for projecting light upon a predetermined area containing a predetermined portion, e.g., the margin of the sample, and a photoelectric transducer on the opposite side and including a plurality of juxtaposed unit elements for producing electric outputs proportional to the quantity of light impinging thereon; and a selection circuit responsive to the outputs from respective unit elements for selecting the output only from a particular unit element corresponding to the predetermined portion of the sample irrespective of the deviation of the position of the sample from said path.

3,718,824
SYSTEM OF DATA DISCRIMINATION IN MONEY DISPENSING MACHINE

Yoshihiro Hatanaka, and Hideto Shigemori, both of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Himeji-shi, Japan

Filed Dec. 28, 1971, Ser. No. 213,019
Claims priority, application Japan, Dec. 28, 1970, 45/120345; Dec. 29, 1970, 45/121645
Int. Cl. H01h *47/32*
U.S. Cl. 307—149 **5 Claims**

For discriminating the respective digits that are exhibited by indicator tubes of a money dispensing machine to indicate an amount of money to be released, there are provided with a plurality of first detecting circuits each having an input connected to the output terminal of each of the indicator tubes which corresponds to the digit "0" to be exhibited thereby. Each of second detecting circuits cooperating with the first detecting circuits has an input connected to the output terminals of each indicator tube which are provided correspondingly to preselected ones of the remaining digits, usually from "1" to "9." An output signal of each indicator tube is produced only from the output terminal corresponding to the digit being exhibited at the moment. The second detecting circuits, or both the first and the second detecting circuits,

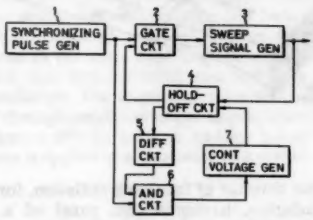


may be each equipped with a switch whereby the circuit can be rendered operative or inoperative as desired.

3,718,825
SWEEP CIRCUIT EXHIBITING ELIMINATED JITTER

Hideo Matsuoka, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1970, Ser. No. 99,208
Claims priority, application Japan, Dec. 27, 1969, 45/1,065, 45/1,066
Int. Cl. H03k *4/10*
U.S. Cl. 307—228 **14 Claims**

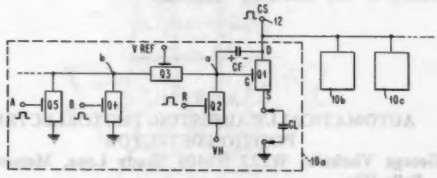


A sweep circuit wherein a signal is derived at the end of the hold-off signal and gated with the synchronising pulses (or signals derived therefrom) to provide an output pulse which automatically adjusts the timing of the end of the hold-off signal, thereby to eliminate jitter automatically.

3,718,826
FET ADDRESS DECODER

Nicholas M. Donofrio, Wappingers Falls, and Richard H. Linton, Poughkeepsie, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed June 17, 1971, Ser. No. 154,103
Int. Cl. H03k *17/00*
U.S. Cl. 307—251 **8 Claims**



This specification described a logic circuit having a capacitor coupled between the gate and the drain of an FET. The capacitor used is a polarized voltage dependent capacitor and

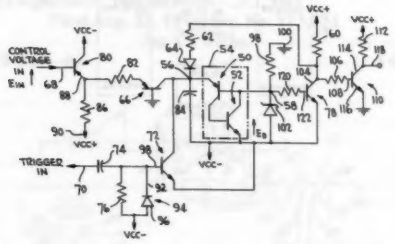
the voltage across this capacitor is controlled to render the FET conductive or nonconductive to selectively gate or not gate pulses applied to the drain of the FET through the FET to a load connected to the source of the FET. When signals are not to be gated through the FET the voltage across the capacitor is maintained at zero potential and the capacitor exhibits substantially zero capacitance. When signals are to be gated through the FET a voltage of a particular potential and polarity is maintained across the capacitor so that the capacitor exhibits a high capacitance. In operation this logic circuit does not form a significant load on the source of potential driving it when the FET is gated nonconductive.

3,718,827

VOLTAGE-CONTROLLED ONE-SHOT

Charles W. Ragsdale, Laramie, Wyo., assignor to the United States of America as represented by the Secretary of the Army

Filed Sept. 14, 1971, Ser. No. 180,297
Int. Cl. H03k *3/26*
U.S. Cl. 307—273 **3 Claims**



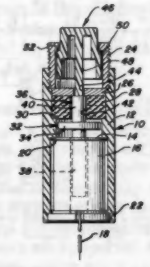
A monostable multivibrator which has two inputs. The first input is for trigger pulses which determine the operating frequency of the circuit. A second input applies a pulse-width control voltage to the circuit. Upon coincidence of the two inputs, an output signal is produced which exhibits a reciprocal relationship between the output pulse width and the applied control voltage.

3,718,828

PUSH BUTTON PULSE SIGNAL GENERATOR

Leon R. Britton, Chicago; Frank S. Vojir, Bwewyn, and William W. Wright, Wheaton, all of Ill., assignors to Guardian Electric Manufacturing Company, Chicago, Ill.

Filed Aug. 11, 1971, Ser. No. 170,729
Int. Cl. H02k *35/06*
U.S. Cl. 310—15 **4 Claims**



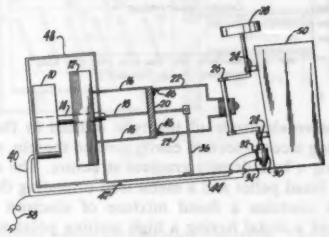
A pushbutton signal generator includes a coil mounted in a cylindrical housing with a plunger positioned in the center of the coil. The plunger is held in a fixed position by a permanent magnet within the housing. A push button may be depressed to drive the plunger through the coil thereby generating a pulse signal in the coil when the coil is placed in a circuit.

3,718,829

RECIPROCATING MOTOR WITH CONDUCTIVE DISC ARMATURE

Arthur L. Wilson, Winthrop Harbor, Ill., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Dec. 8, 1970, Ser. No. 96,115
Int. Cl. H02k *33/00*
U.S. Cl. 310—27 **7 Claims**



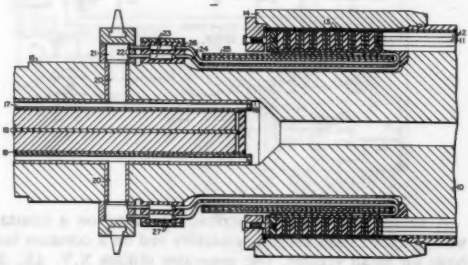
An alternating current operated motor which cuts off current flow during alternate half cycles to produce a reciprocating movement between a coil and a movable member. This movement is applied to a crank shaft to convert reciprocating motion into rotary motion.

3,718,830

LIQUID COOLED ROTOR FOR DYNAMOELECTRIC MACHINES

Harold M. Philofsky, Pittsburgh; Sui-Chun Ying, Monroeville, and Jacob Chottiner, McKeesport, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 8, 1971, Ser. No. 160,648
Int. Cl. H02k *1/32*
U.S. Cl. 310—64 **5 Claims**

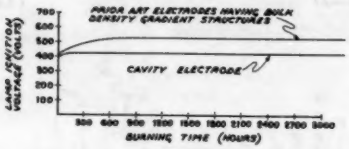


A cooling system is provided for liquid cooled rotors including an improved insulating hose member incorporated in the cooling system to supply coolant liquid to the rotor winding. The improved hose member is a plastic tube with metal fittings enclosed in and reinforced by a glass filament wound housing which extends over the tube and axially beyond the metal fittings to form a substantially rigid, leak-proof, insulating hose member.

3,718,831
CAVITY PELLET EMISSIVE ELECTRODE

Donald A. Butter, Beverly, Mass.; Edmund R. Kern, Hampton, N.H., and Richard A. Menelly, Danvers, Mass., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed March 31, 1972, Ser. No. 240,110
Int. Cl. H01j 1/30, 1/38
U.S. Cl. 313—346 R 10 Claims

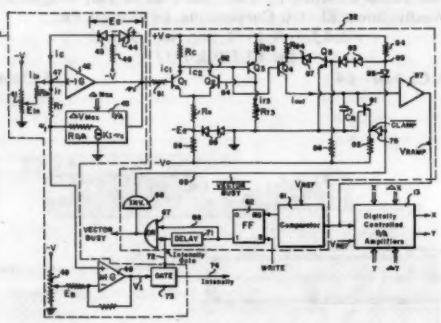

PRIOR ART ELECTRODES HAVING BULK DENSITY GRADIENT STRUCTURES
CAVITY ELECTRODE
LAMP IGNITION VOLTAGE (VOLTS)
BURNING TIME (HOURS)

An emissive electrode of the type utilized in fluorescent lamps having a conic section cavity formed therein, said electrode having a bulk density gradient structure. The electrode includes a fused pellet and a metal lead extending therefrom. The pellet contains a fused mixture of electron emissive material and a metal having a high melting point and a low vapor pressure at the operating temperature of the lamp.

3,718,832
APPARATUS FOR PRODUCING RAMP SIGNALS AND AN INTENSITY CONTROL SIGNAL IN RESPONSE TO DIGITAL DATA, PARTICULARLY FOR A CRT VECTOR GENERATOR

Brian Allan Premru, Ridgefield, Conn., and James H. Nash, Jr., Hawthorne, N.Y., assignors to Information Displays, Inc., Mt. Kisco, N.Y.

Filed Aug. 21, 1970, Ser. No. 65,779
Int. Cl. H01j 29/70
U.S. Cl. 315—18 13 Claims

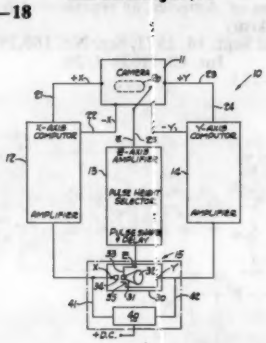


A vector generator is described operating on a constant writing speed basis for larger vectors and on a constant time basis for small vectors. The generator utilizes X,Y. ΔX, ΔY and ΔMax digital data, ΔMax being the greater in magnitude of ΔX and ΔY. A feedback control amplifier supplied with a constant input signal has two feedback loops. One loop includes a D/A attenuator supplied with ΔMax and the other includes a bias source which limits the output to a predetermined value for small values of ΔMax. The output of the D/A attenuator is used to produce an intensity control signal which varies with vector length in the region where limiting takes place. The control amplifier output is fed to a difference amplifier having a transistor-controlled feedback circuit to produce a current accurately proportional to the control amplifier output, and another transistor having an input circuit like that of the feedback transistor and supplied with the same input supplies charging current to a ramp capacitor. The ramp signal is compared with a reference to produce a ramp stop signal. Ramp start and stop signals are delayed and gate the intensity control signal, and the delayed stop signal is used to terminate the ramp rise. The ramp signals are supplied to D/A amplifiers controlled by the ΔX and ΔY digital data to produce CRT deflection waves.

3,718,833
SCINTILLATION CAMERA SYSTEM

Ronald J. Martone, Cheshire; Peter G. Mueller, Guilford, and Homer M. Bailey, North Haven, all of Conn., assignors to Picker Corporation, White Plains, N.Y.

Filed June 18, 1969, Ser. No. 834,478
Int. Cl. H01j 29/70
U.S. Cl. 315—18 13 Claims

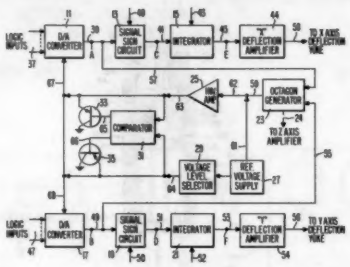


A scintillation camera system includes an oscilloscope for producing visible indications at discrete, separate positions on a screen of a cathode ray tube in response to scintillations at corresponding locations in a scintillator. The oscilloscope includes an electron gun and beam deflecting elements which direct an electron beam to particular positions on the screen in response to scintillations. Circuitry is providing for diffusing the individual visible indications on the screen thereby reducing separations between these positions.

3,718,834
LINE GENERATOR FOR CRT DISPLAY SYSTEMS

James R. Bacon, Erdenheim, George H. Barnes, Philadelphia, and John C. Schott, Paoli, Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sept. 8, 1971, Ser. No. 178,620
Int. Cl. H01j 29/70
U.S. Cl. 315—22 7 Claims



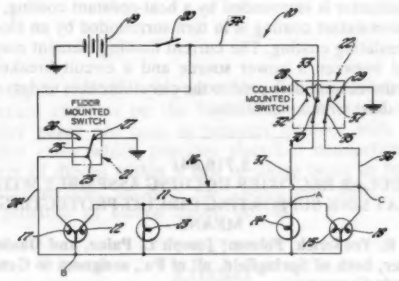
A vector generator for CRT display systems that limits the display length of vectors to a predeterminable maximum length and permits display of vectors having lengths less than the predetermined maximum length at a con-

stant display intensity. Digital logic words representative of the components of the vector to be generated are converted into analog signals which are integrated to form ramp signals for driving deflection coils in a CRT. A control circuit, monitoring the analog signals, converts these signals to an approximation of the square root of the sum of the squares of the received signals. The result is summed with an adjustable voltage to establish an adjusted reference signal to the D/A converters for causing a vector of predetermined length to be displayed. An independent reference signal permitting vectors shorter than the predetermined maximum length to be displayed is constantly compared with the adjusted reference signal and is automatically substituted therefor when and as long as the magnitude of the adjusted signal, as derived from the input digital logic words to the D/A converters is greater than the magnitude of the independent reference signal.

3,718,835
DUAL DIMMER SWITCH CIRCUIT

George R. Stoughton, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 23, 1971, Ser. No. 173,831
Int. Cl. B60q
U.S. Cl. 315—83 **1 Claim**



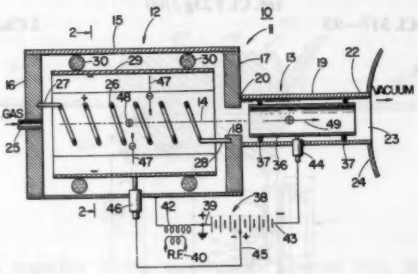
A vehicle lighting system for lighting the roadway ahead of a vehicle. The system includes arrays of high and low beam headlamps and provides for selectively energizing either array. Floor mounted and the steering column mounted dimmer switches each having first and second switch settings control energization of the lamp arrays by a power source. Changing the setting of either dimmer switch in any sequence alternately energizes the lamp arrays.

3,718,836
MULTIPACTOR ION GENERATOR

George W. Bain, Salt Lake City, Utah, and Fred C. Haak, Fort Wayne, Ind., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Nov. 18, 1970, Ser. No. 90,587
Int. Cl. H01j 7/24
U.S. Cl. 315—111 **13 Claims**

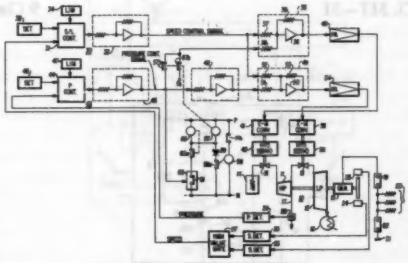
An electrostatic, transverse axis, multipactor ion gun having an anode in the form of a helically coiled element defining a cylinder having an axis, the turns of the anode element being axially spaced-apart to provide an open anode structure. An elongated dynode sleeve concentrically surrounds the anode, being radially spaced therefrom, the interior surface of the dynode sleeve having secondary emissive properties. The anode and dynode sleeve are supported within the first section of an enclosing envelope which has a gas inlet therein for admitting ionizable gas at an ionizing pressure thereto. An elongated accelerating electrode sleeve is provided supported within a second section of the envelope and coaxial with the axis, the accelerating electrode sleeve being axially spaced from the anode and dynode sleeve. The second envelope section has a coaxial opening therein through which the ions which are generated by the gun axially flow. Progressively lower direct current potentials are applied to the anode, dynode sleeve and accelerating electrode so as to cause circulatory electron flow within the dynode sleeve through the anode generally transverse to the axis, such circulatory electron flow causing generation of ions in the region of the axis which are caused to flow axially toward and through the envelope opening by the accelerating electrode. The interior surface of the dynode sleeve is formed as a plurality of axially extending, abutting segments which are triangular in cross-section, and which have their apices extending radially outwardly with respect to the axis, so that a preponderance of the electrons which flow through the anode bypass the region immediately surrounding the axis, thereby reducing losses due to recombination of ions and electrons.



3,718,837
CONTROL SYSTEM FOR AN EXTRACTION TURBINE SYSTEM

Mitsuhisa Yokota, and Hiroya Sato, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Company Limited, Kawasaki-shi, Japan

Filed April 17, 1972, Ser. No. 244,796
Claims priority, application Japan, April 19, 1971, 46/25133
Int. Cl. H02h 7/06
U.S. Cl. 317—13 R **2 Claims**



A control system for an elastic fluid turbine having a high pressure turbine stage and a motive fluid flow thereto regulated by a main control valve, and a low pressure turbine stage to which the flow of motive fluid is controlled by an interstage control valve. A speed/load control arrangement controls the main and interstage control valves in the same directions responsive to rotational speed of the turbine and a pressure control arrangement controls the valves respectively in opposite directions responsive to the pressure of extracted motive fluid. The control of the main control valve by the pres-

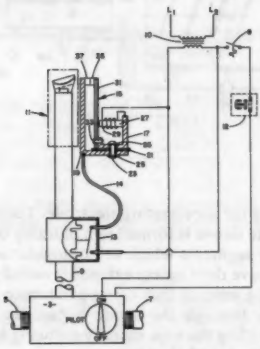
sure control arrangement is interrupted when the load of the turbine system is lost, to prevent overspeed upon such occurrence.

3,718,838

IGNITION DEVICE FOR A GAS FIRED APPLIANCE

William H. Branche, Indianapolis, Ind., assignor to Carrier Corporation, Syracuse, N.Y.

Filed July 28, 1971, Ser. No. 166,893
Int. Cl. F23g *3/00*
U.S. Cl. 317—93 **2 Claims**



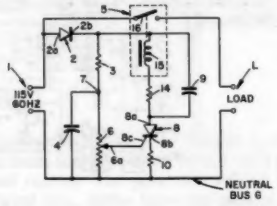
Spark generation means for igniting a gas flame, one of the contacts of the spark generator contact set being mounted on a bimetallic element to hold the contacts open when the bimetallic element is heated.

3,718,839

UNDER-VOLTAGE PROTECTION DEVICE

Donald J. Conti, 626 Bergen Boulevard, Ridgefield, N.J., and Thomas L. Reilly, 66 Raymond Avenue, Nutley, N.J.

Filed July 30, 1971, Ser. No. 167,591
Int. Cl. H02h *3/24*
U.S. Cl. 317—31 **9 Claims**



An under-voltage protection device including an A.C. source connected across a load; a series combination of a line switch and a control rectifier connected between the A.C. source and the load; and a series combination of a rectifier and voltage divider connected across the A.C. source; wherein the control electrode of the control rectifier is connected to an adjustable terminal of the voltage divider.

3,718,840

CURRENT LIMITING ELEMENT

Hideo Tanaka; Yasutaka Imajyo; Ikuo Takano, all of Tokyo; Jiro Takahashi, Yokohama, and Kazumichi Oka, Tokyo-to, all of Japan, assignors to Tokyo Shibaura Electric Company, Ltd., Kawasaki-shi, Japan

Filed Sept. 23, 1971, Ser. No. 183,014
Claims priority, application Japan, Oct. 8, 1970, 45/87906
Int. Cl. H02b *1/18*
U.S. Cl. 317—99 **15 Claims**

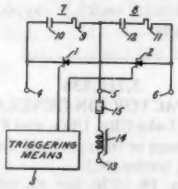
A current limiting element is disclosed which includes an electrical conductor consisting of one or more wires formed of a metal having a high temperature coefficient of resistance. The conductor is surrounded by a heat-resistant coating, and the heat-resistant coating is in turn surrounded by an electrically insulating coating. The current limiting element may be coupled between a power source and a circuit breaker to reduce the current delivered to the circuit breaker under overload or short circuit conditions.

3,718,841

MODULAR RECTIFIER HOLDING ASSEMBLY WITH HEAT SINK SUPPORTING CIRCUIT PROTECTING MEANS

Albert R. Frederick, Folsom; Joseph L. Paine, and Daniel B. Rosser, both of Springfield, all of Pa., assignors to General Electric Company

Filed July 9, 1971, Ser. No. 161,229
Int. Cl. H01l *1/12*
U.S. Cl. 317—100 **7 Claims**

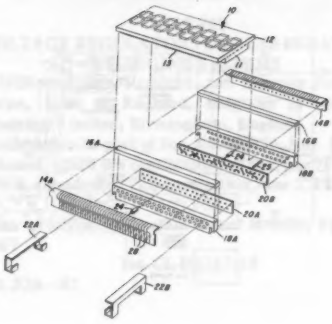


Disclosed is a modular semiconductor rectifier mounting unit adapted for disposition within a cavity in an insulative supporting structure through which a cooling fluid is passed. The unit includes heat dissipating electrodes which are connected to the cathode and anode terminals of a pair of mounted rectifiers. Termination means are connected to the electrodes and extend in the same direction away therefrom. The termination means are adapted for directly supporting thereon a circuit isolating fuse. A reverse voltage protecting circuit is mounted on the module via a heat dissipating electrode. Frame means are provided disposed about the electrodes to space them from the support structure and to increase the creep distance therebetween.

3,718,842
LIQUID CRYSTAL DISPLAY MOUNTING STRUCTURE

Charles P. Abbott III, Dallas, and John M. Reilly, Garland, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 21, 1972, Ser. No. 246,207
Int. Cl. H05k 1/64
U.S. Cl. 317—101 CC 4 Claims

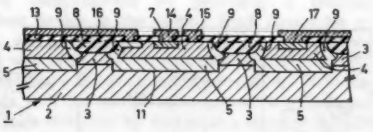


A liquid crystal display mounting structure wherein the electrical contacts on the back side of a liquid crystal display panel are held in pressure contact with a flat flexible cable which provides electrical connection to a matrix of diodes within a pair of diode boats or holders; interconnections between the diodes and other circuits are provided by etched circuit boards.

3,718,843
COMPACT SEMICONDUCTOR DEVICE FOR MONOLITHIC INTEGRATED CIRCUITS

Else Kooi, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 8, 1971, Ser. No. 160,653
Claims priority, application Netherlands, July 10, 1970, 7010205
Int. Cl. H01l 19/00
U.S. Cl. 317—235 R 7 Claims

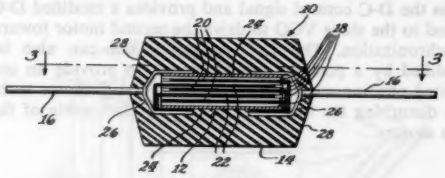


A semiconductor device having a semiconductor body which comprises an island-shaped region of a first conductivity type which is fully surrounded within the body by a region, preferably a buried layer, of the second conductivity type and an adjoining surface zone of the second conductivity type. According to the invention said surface zone is formed by a preferably diffused zone which adjoins an inset oxide pattern which fully surrounds the island. As a result of this, monolithic circuits of high packing density can be obtained, the buried layer with the island and a further surface zone of the second conductivity type present therein preferably forming a transistor.

3,718,844
CAPACITOR WITH TERMINAL CLIPS

Robert Leo Brazier, Pickens, S.C., assignor to Sangamo Electric Company, Springfield, Ill.

Filed Jan. 22, 1971, Ser. No. 108,908
Int. Cl. H01g 1/14
U.S. Cl. 317—258 9 Claims

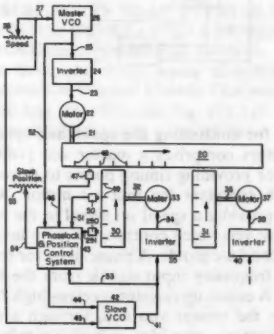


A capacitor having superimposed silvered mica sheets secured by end clips to which conductor lead wires are connected with their axes coinciding with the center axis of the assembled sheets, the sheets and lead wires being encased centrally within a cylindrical insulating casing with the lead wires extending axially outwardly of the casing.

3,718,845
VARIABLE SPEED MASTER-SLAVE MOTOR CONTROL SYSTEM WITH CONTINUOUS POSITION ADJUSTMENT

Benton Bejach, Santa Ana, and Earl T. Bernhardt, Costa Mesa, Calif., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed June 22, 1971, Ser. No. 155,569
Int. Cl. H02p 5/46
U.S. Cl. 318—78 8 Claims



A system for controlling the speed and synchronization of two A-C motors comprises a master VCO (voltage-controlled oscillator) for providing timing pulses to drive the master inverter which energizes the first A-C motor. A system speed control pot provides a speed set signal to the master VCO, and also to a slave VCO which controls the slave inverter that energizes the second A-C motor. A phase detector receives first and second low-frequency input signals from the loads driven by the motors. A count-up register receives high-frequency pulse signals from the master VCO and, through a DAC (digital-to-analog converter), provides a positive-going ramp

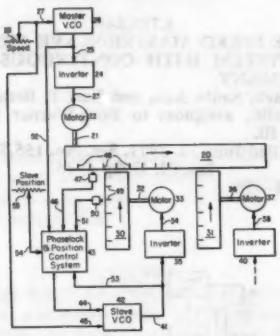
signal which has its reset portion determined by an output signal from the phase detector. A count-down register receives high-frequency pulse signals from the slave VCO, through another DAC, provides a negative-going ramp signal which has its reset portion determined by a second reset signal from the phase detector. These opposite-slope ramp signals are summed with a signal from the phase detector to provide a D-C control signal which is used as a second input signal to the slave VCO, thus maintaining motor synchronization. An out-of-sync signal overrides the D-C control signal and provides a modified D-C signal to the slave VCO to drive the second motor toward synchronization. The D-C control signal can also be modified by a position control signal, to provide an unlimited position variation of the second A-C motor without disturbing the synchronized speed relationship of the two motors.

3,718,846

VARIABLE SPEED PLURAL MOTOR CONTROL SYSTEM WITH INCREMENTAL SPEED SYNCHRONIZATION

Benton Bejach, Santa Ana, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed April 13, 1971, Ser. No. 133,650
Int. Cl. H02p 5/46
U.S. Cl. 318—85 **13 Claims**



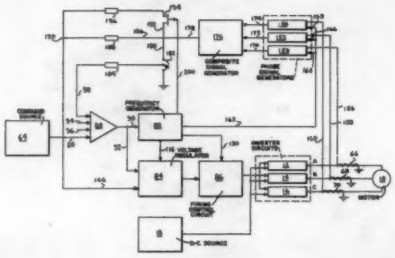
A system for controlling the speed and synchronization of two a-c motors comprises a master vco (voltage-controlled oscillator) for providing timing pulses to drive the master inverter which energizes the first a-c motor. A system speed control pot provides a speed set signal to the master vco, and also to a slave vco which controls the slave inverter that energizes the second a-c motor. A phase detector receives first and second low-frequency input signals from the loads driven by the motors. A count-up register receives high-frequency pulse signals from the master vco and, through a dac (digital-to-analog converter), provides a positive-going ramp signal which has its reset portion determined by an output signal from the phase detector. A count-down register receives high-frequency pulse signals from the slave vco and, through another dac, provides a negative-going ramp signal which has its reset portion determined by a second reset signal from the phase detector. These opposite-slope ramp signals are summed with a signal from the phase detector to provide a d-c control signal which is used as a second input signal to the slave vco, thus maintaining motor synchronization. An out-of-sync signal overrides the d-c control signal and provides a modified d-c signal to the slave vco to drive the second motor toward synchronization. The d-c control signal can also be modified by a position control signal, to provide an incremental position variation of the second a-c motor without disturbing the synchronized speed relationship of the two motors.

3,718,847

ADJUSTABLE SPEED POLYPHASE A-C MOTOR DRIVE UTILIZING AN IN-PHASE CURRENT SIGNAL FOR MOTOR CONTROL

Carlton Eugene Graf and Einar Aasen Skogsholm, Erie, and Werner Karl Volkmann, Fairview, Pa., assignors to General Electric Company

Filed May 28, 1971, Ser. No. 147,771
Int. Cl. H02p 5/40
U.S. Cl. 318—227 **5 Claims**



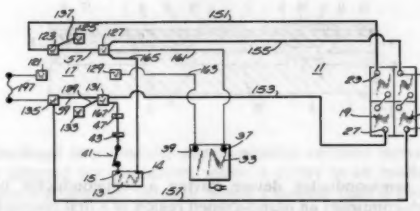
The current and voltage to each phase of an A-C motor are sensed and utilized to produce a phase control signal having an average value proportional to the average magnitude of the in-phase current within that phase. The phase control signals are summed to produce a composite signal indicative of certain motor operating characteristics, including slip and torque, the composite control signal being supplied to the control of an inverter which produces variable frequency alternating current electric power for driving the A-C motor. In response to variations in the composite control signal, the fundamental frequency and the average voltage of the alternating current power are adjusted by the control.

3,718,848

SERIES-PARALLEL BATTERY SYSTEM AND SWITCH THEREFORE

Charles E. Hines, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed March 29, 1971, Ser. No. 128,928
Int. Cl. H02j 7/00
U.S. Cl. 320—7 **9 Claims**



Disclosed herein is a vehicle including an electrical system comprising a direct current drive motor, first and second battery sets, a charger adapted to be plugged into an alternating current source, and a selector switch movable between first and second positions and operable, when in the first position, to connect the first and second battery sets in parallel relation to the motor operable, when in the second position, to con-

nect the first and second battery sets in series relation to the motor and to the charger. In addition, the electrical system includes an "off-on" switch interposed between the motor and the selector switch and operable to selectively open and close the connection of the motor to the selector switch whereby, when the "off-on" switch is opened, and the selector switch is in the second position, the charger can be plugged into an alternating current source to charge the battery sets and whereby, when the selector switch is in the first position, the charger is electrically disconnected from the battery sets.

3,718,849

VOLTAGE REGULATORS FOR USE IN BATTERY CHARGING SYSTEMS

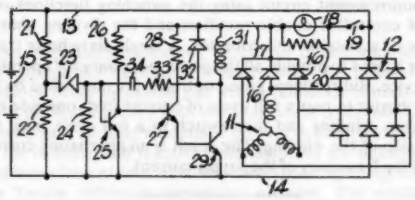
Roger William Nolan, Redditch, and Maurice James Wright, Quinton, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Continuation-in-part of Ser. No. 93,876, Nov. 30, 1970, abandoned, which is a continuation of Ser. No. 701,892, Jan. 31, 1968, abandoned. This application June 3, 1971, Ser. No. 149,585

Claims priority, application Great Britain, Feb. 6, 1967, 5,566/67

Int. Cl. H02j 7/10

U.S. Cl. 320—61 **4 Claims**



A voltage regulator is disclosed for varying the output of a generator of a road vehicle by changing the current flow in its field winding. The voltage regulator device includes, as is common, a Zener diode or equivalent break-down device which, as known, conducts at a predetermined battery voltage, and serves to render a transistor conductive, which transistor, when rendered conductive, acts through further components to reduce the current flow in the field winding.

In systems of this type it is commonplace to provide for temperature compensation by providing a thermistor or equivalent device in the circuit. Such device, in a known manner, serves to compensate for changes in battery temperature, as well as for the changes in temperature coefficient of the Zener diode and the transistor so utilized. However, in accordance with the instant invention, such temperature compensation is achieved by means of a simple impedance network interconnecting the Zener diode or equivalent device and the transistor, such impedance network, in effect, serving to multiply the net negative inherent temperature characteristics of the transistor by a selected amount to compensate for the net positive temperature coefficient of the Zener diode, the resultant characteristics of the voltage regulator circuit with respect to temperature being desirably negative or, at least, zero. In the specific preferred embodiment, a resistor is disposed across the base-emitter of the transistor, and another resistor is disposed in series circuit with the Zener diode. The ratio of these two resistors substantially defines a multiplication factor which enhances the net negative temperature coefficient of the transistor and serves to overcome the net positive temperature coefficient of the Zener diode.

3,718,850

SEMICONDUCTOR RECTIFIER DEVICE

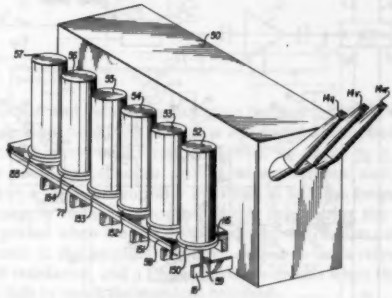
Isao Juri, Kazuo Koguchi, Toshimi Kuroiwa, and Tomoyuki Koken, all of Tokyo, Japan, assignors to Tokyo Shibaura Electric Company, Ltd., Kawasaki-shi, Japan

Filed July 15, 1971, Ser. No. 163,006

Claims priority, application Japan, July 17, 1970, 45/62314; July 17, 1970, 45/62315; July 17, 1970, 45/62317

Int. Cl. H02m 7/00; H02b 1/00; H01f 17/00

U.S. Cl. 321—8 C **6 Claims**



A semiconductor rectifier device includes a transformer enclosure having a transformer therein and a plurality of separate rectifier unit tanks. A plurality of output terminals each of which corresponds to a phase winding of the transformer are provided and extend through at least one of the side walls of the transformer enclosure. Each of the rectifier unit tanks contains semiconductor rectifier elements therein for rectifying a given phase of the output of the transformer and is mounted on the side wall of the transformer enclosure. The input terminals to the unit tanks are respectively connected to the output terminals of the transformer.

3,718,851

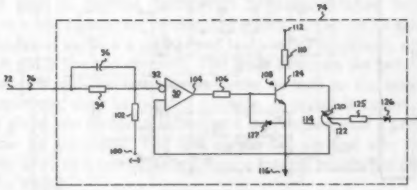
MEANS RESPONSIVE TO AN OVERVOLTAGE CONDITION FOR GENERATING A FREQUENCY INCREASING CONTROL SIGNAL

Carlton Eugene Graf, and Einar Aasen Skogsholm, both of Erie, Pa., assignors to General Electric Company

Filed Aug. 16, 1971, Ser. No. 172,113

Int. Cl. H02m 7/52, 1/18; H02p

U.S. Cl. 321—12 **11 Claims**

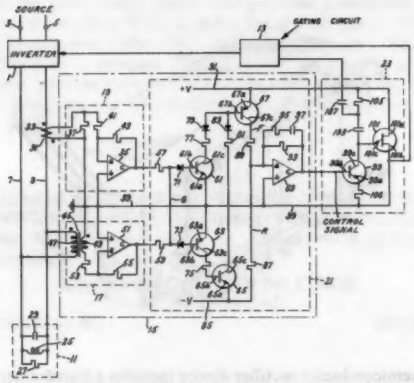


The d-c voltage of reversible d-c to a-c power conversion apparatus is continuously sensed and utilized to produce an overvoltage signal when and only when the d-c voltage is equal to or greater than a pre-determined level. The overvoltage signal is transmitted to the control means for the power conversion apparatus as a control signal, the magnitude and polarity of the overvoltage signal being such that the operating frequency of power conversion means is increased.

3,718,852
PHASE ANGLE REGULATOR FOR HIGH FREQUENCY INVERTER

Ronald B. Bailey, Kennett Square, Pa., assignor to General Electric Company,

Filed July 14, 1971, Ser. No. 162,430
Int. Cl. H02m 7/52
U.S. Cl. 321—19 5 Claims

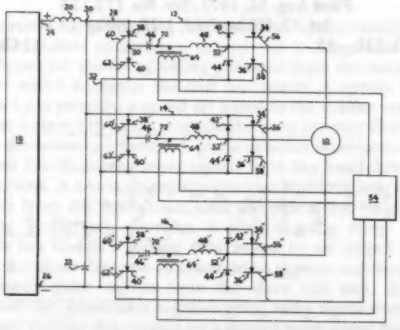


In a static inverter, phase angle error detection circuitry is used to control the operating frequency of the inverter as a function of the phase displacement between the alternating current supplied to a tank load and the alternating voltage across that load, thereby regulating the power factor of the load circuit.

3,718,853
PULSE WIDTH LIMITING MEANS FOR INVERTER CIRCUITS

Carlton Eugene Graf, Erie, Pa., assignor to General Electric Company

Filed Aug. 16, 1971, Ser. No. 171,970
Int. Cl. H02m 1/18, 7/52
U.S. Cl. 321—12 14 Claims

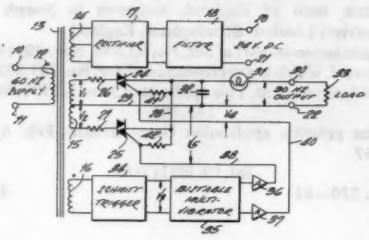


An inverter circuit utilizing gate controlled load rectifiers for changing direct current electric power to alternating current electric power and gate controlled commutating rectifiers for commutating the respective load rectifiers is provided with control apparatus for sensing commutating current during the commutation of a first load rectifier and blocking commutation of a second load rectifier (through the firing or turning "on" of the respective commutating rectifier) during a blocking time interval including a variable commutation interval during which commutating current is sensed and a fixed delay interval following the commutation interval.

3,718,854
FREQUENCY CONVERTER CIRCUIT WITH MULTIVIBRATOR CONTROL

Constantine A. Spyrou, Clifton Heights, Pa., and George P. Klein, Haddonfield, N.J., assignors to Electrospace Corporation, Westbury, N.Y.

Filed Oct. 29, 1971, Ser. No. 193,823
Int. Cl. H02m 5/30
U.S. Cl. 321—69 R 6 Claims

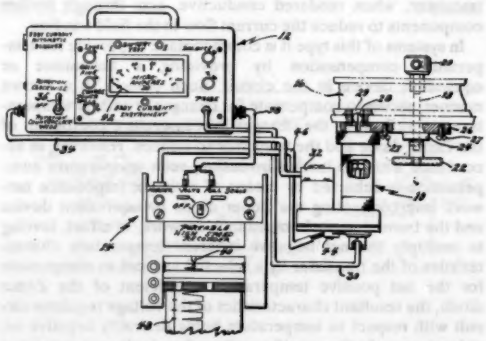


A non-resonant circuit using the switching functions of a pair of controlled double rectifiers and the dividing characteristic of a bistable multivibrator. A single sixty hertz transformer is used to provide all the power necessary for operating the device. Bidirectional gates, or triacs, are controlled by the multivibrator to pass a full cycle of current from one side of a secondary winding and then switch to a full cycle from the other side of the winding. The result is an alternating current of half the frequency of the supply current.

3,718,855
EDDY CURRENT FLAW DETECTION SYSTEM

Albert P. Rogel, 2655 Ellenbrook Drive, Rancho Cordova, Calif., and Joseph J. Scalese, 9507 Bullion Way, Orangevale, Calif.

Filed Nov. 30, 1970, Ser. No. 93,676
Int. Cl. G01r 33/12
U.S. Cl. 324—37 9 Claims



An automatic eddy current flaw detection system including a measuring instrument with a chart recorder and a flaw sensing device having an eddy current probe in a housing attached to the work piece and driven by a reversible motor along a helical path into an opening in the work piece. The

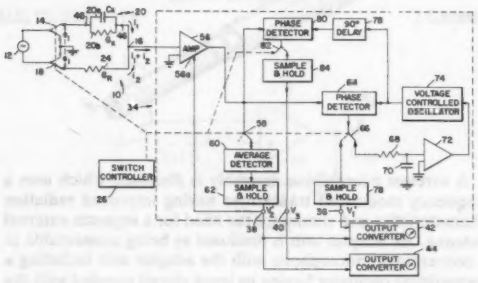
housing contains a standard calibration unit which the probe passes and thereby allows for instrument standarization facilitating the reproducibility of inspection conditions.

3,718,856

INDUCTANCE AND CAPACITANCE REACTANCE MEASURING INSTRUMENT HAVING MINIMAL INCLUSION OF STRAY REACTANCES

Jozef H. Hendriks, Wakefield, Mass., assignor to Teradyne, Inc., Boston, Mass.

Filed Dec. 2, 1970, Ser. No. 94,308
Int. Cl. G01r *27/00*
U.S. Cl. 324—57 R **13 Claims**



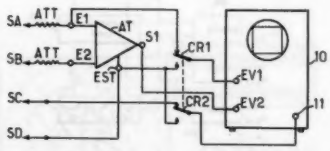
An impedance-measuring electrical circuit modulates a high frequency current alternately with the unknown impedance being measured and with a reference impedance. A detector synchronized with the alternation of the modulation detects the resultant modulated current to produce a measure of the resistive and reactive components of the unknown impedance element relative to the corresponding components of the known reference impedance element. The modulating portion of the circuit is constructed with minimal stray reactances that effect the modulated output current, but the other portions of the circuit are essentially free of this restriction.

3,718,857

TESTING DEVICE FOR DIFFERENTIAL AMPLIFIERS

Marcel Bernard, Angers, France, assignor to Societe Industrielle Honeywell Bull (Societe Anonyme), Paris, France

Filed May 24, 1971, Ser. No. 146,404
Claims priority, application France, May 29, 1970, 7019839
Int. Cl. G01r *27/00*
U.S. Cl. 324—57 R **8 Claims**



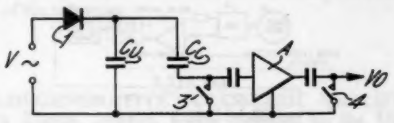
A device for verifying the response time of a differential amplifier, wherein recurrent pulses are applied to input terminals of a differential amplifier under test and a visual testing instrument is coupled to respond to such input pulses and the consequent output pulses of the amplifier to provide a display of the response time of the amplifier, and wherein a signal is applied between the two input terminals of the amplifier to effectively cancel the unbalanced voltage between such two terminals in the absence of test pulses.

3,718,858

ELECTRICAL TESTING METHODS AND APPARATUS

David Adams Gilmor Tait, 34 Mount Street, Dorking, Ireland

Filed April 27, 1971, Ser. No. 137,891
Claims priority, application Great Britain, April 27, 1970, 20,185/70
Int. Cl. G01r *27/26*
U.S. Cl. 324—60 C **19 Claims**



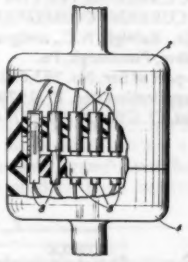
A method and means for insulation resistance testing wherever a unidirectional test voltage is intermittently applied to a capacitive circuit under test connected in shunt to a high quality coupling capacitor serving as a reference and connected to a chopper amplifier operated at half the frequency of the supply voltage source and active only during the measuring period when the test voltage is removed. A bias current is injected at the amplifier input or output to set a reference level of resistance, and a toggle device responds when the test circuit fails to reach the standard required.

3,718,859

ELECTRIC CIRCUIT TEST ELEMENT FOR USE WITH A PAIR OF ELECTRICAL CONNECTORS

Michael S. Arlow, Livonia, Mich., assignor to The United States of America as represented by the Secretary of the Army

Filed Feb. 1, 1971, Ser. No. 111,296
Int. Cl. H01r *13/50*; G01r *31/02*
U.S. Cl. 324—72.5 **5 Claims**



A pair of harness connectors have sandwiched between them a test connector or element which carries on its external cylindrical surface a number of test circuit terminals, one for each pin in the test element. The leads between the test circuit terminals and the test element pins, as well as the terminals themselves, may be printed circuits. A meter is tapped onto any given test circuit terminal and is provided with a probe so it can be grounded. The test element is divided into two or three discs so it can accommodate a greater number of circuits to be tested.

3,718,860

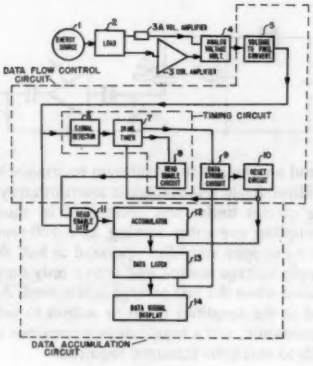
REAL TIME DIGITAL ENERGY METER

Victor B. Kwast, Union; Douglas A. Morlock, Lake Hopatcong, and Richard G. Salz, Succasunna, all of N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed Aug. 25, 1971, Ser. No. 174,834
Int. Cl. G01r *21/00*
U.S. Cl. 324—142 **4 Claims**

A real-time digital energy meter particularly suited for measuring electrical energy in a non-linear load, comprising: volt-

age sensing means, said means connected across said load; current sensing means, said current sensing means connected into said load for current measurement and said current sensing means having a voltage output proportional to its current input; electronic multiplication means having two inputs, the two inputs being the respective outputs of said voltage and



current sensing means, wherein said multiplication means produces a voltage output proportional to the product of its two inputs; and a time-integrating digital voltmeter having as its input the output of said multiplication means, and having a selectable period of time integration wherein the output of said integrating voltmeter is proportional to the energy dissipated within said load during said period of integration.

3,718,861

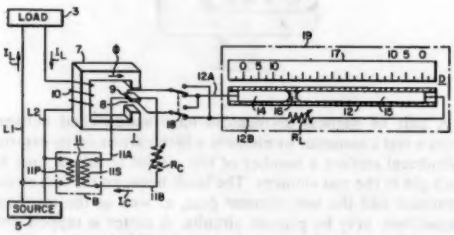
ELECTROLYTIC CAULOMETER FOR INTEGRATING VOLTAGE AND CURRENT COMPONENTS OF POWER

James E. Ramsey, Jr., Raleigh, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 793,052, Jan. 22, 1969, abandoned. This application Dec. 17, 1970, Ser. No. 99,093

Int. Cl. G01r *21/00, 11/44*

U.S. Cl. 324—142 **4 Claims**



A device for measuring the quantity of a direct current flow therethrough comprises a glass tube having a body of mercury at each end which serves as an electrode. The two electrodes are separated by an electrolyte such as a mercury-salt solution. For integrating a function of the voltage and current in an electric circuit a transducer such as a Hall generator converts the function into an output current having a direct-current component which is passed through the contents of the tube. The mercury-salt solution then moves in a direction dependent on the direction of the direct current passing therethrough. The position of the mercury-salt solution represents the desired integration. The direction of the current through the tube may be reversed after each reading or it may be reversed when the mercury-salt solution arrives at predetermined positions respectively adjacent the ends of the tube.

3,718,862

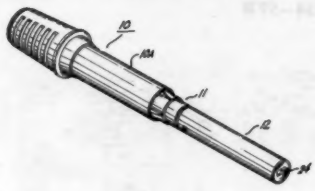
WIRELESS MICROPHONE AND ADAPTER KIT

Elwood G. Norris, Seattle, Wash., assignor to Sound Systems International, Inc., Seattle, Wash.

Filed June 30, 1969, Ser. No. 837,809

Int. Cl. H04b *1/02*

U.S. Cl. 325—111 **7 Claims**



A wireless microphone assembly is disclosed which uses a frequency modulated transmitter having improved radiation characteristics and eliminates the need for a separate external antenna. An adapter unit is disclosed as being connectable to a conventional microphone with the adapter unit including a transmitting oscillator having its input circuit coupled with the conventional microphone output circuit via plug connectors and with the output circuit of the frequency modulated oscillator being connected via a grounding terminal to the case of the conventional microphone. The case of the conventional microphone then acts as a radiating antenna giving rise to high strength signals without the need for any protruding antenna arrangements. Mechanical construction details as well as schematic circuit diagrams are provided.

3,718,863

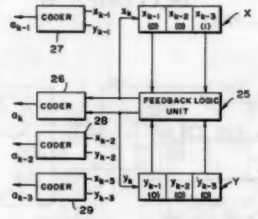
M-ARY LINEAR FEEDBACK SHIFT REGISTER WITH BINARY LOGIC

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Marvin Perlman, 1100 Dempsey Ave., Granada Hills, Calif.

Filed Oct. 26, 1971, Ser. No. 192,101

Int. Cl. G11c *19/00*; H03k *23/00*

U.S. Cl. 328—37 **11 Claims**



A family of *m*-ary linear feedback shift registers with binary logic is disclosed. Each *m*-ary linear feedback shift register with binary logic generates a binary representation of a nonbinary recurring sequence, producable with a *m*-ary linear feedback shift register without binary logic in which *m* is greater than 2. The state table of a *m*-ary linear feedback shift register without binary logic, utilizing sum modulo *m* feedback, is first tabulated for a given initial state. The entries in the state table are coded in binary and the binary entries are used to set the initial states of the stages of a plurality of binary shift registers. A single feedback logic unit is employed which provides a

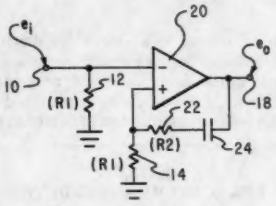
separate feedback binary digit to each binary register as a function of the states of corresponding stages of the binary registers. The stages of the binary registers which are fed back depend upon the stages which are fed back through nonzero multipliers in the *m*-ary linear feedback shift register, utilizing sum modulo-*m* feedback.

3,718,864

CROSSOVER DETECTOR

William J. Kelly, Sauquoit, and Warren A. Reynolds, Ilion, both of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Filed Feb. 26, 1971, Ser. No. 119,109
Int. Cl. H03k *5/20*
U.S. Cl. 328—115 **7 Claims**



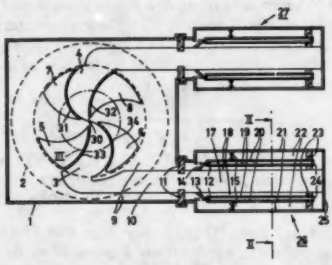
A crossover detector utilizing an operational amplifier, a first input of which is connected through a resistor to ground and the second input of which is connected to the signal source. The output is fed back through an RC circuit to the first input. The time constant of the RC circuit is such that the prior art hysteresis time-delay error is eliminated because a hysteresis effect is introduced only immediately after a crossover is detected; the hysteresis effect decays exponentially and is essentially totally absent by the time that the next crossover occurs.

3,718,865

DEVICE FOR ACCELERATING CHARGED ATOMIC PARTICLES INCLUDING A PAIR OF HIGH FREQUENCY RESONATORS

Derk Wierts, Emmasingel, Eindhoven, and Pieter Boomsma, Beekbergen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed April 8, 1971, Ser. No. 132,326
Claims priority, application Netherlands, April 29, 1970, 7006247
Int. Cl. H05h *13/00*
U.S. Cl. 328—234 **1 Claim**



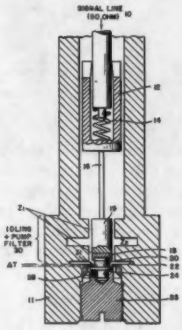
An electric high-frequency resonator for accelerating charged atomic particles, comprising a first hollow conductor, a second hollow conductor extending within the first hollow conductor, a third hollow conductor extending within the second hollow conductor and a fourth hollow conductor extending within the third hollow conductor. The second and third hollow conductors and the first and fourth hollow conductors are connected respectively to form first and second waveguides for the propagation of high-frequency waves. Input coupling means are employed to connect the interposed first and second waveguides in series thereby providing increased electrical length characteristics for the propagation of high-frequency electric waves without increasing the structual length of the resonator.

3,718,866

NON-DEGENERATIVE PARAMETRIC AMPLIFIER

Jochen Edrich, Denver, Colo., assignor to the United States of America as represented by the Secretary of the Navy

Filed Mar. 22, 1972, Ser. No. 236,935
Int. Cl. H03f *7/04*
U.S. Cl. 330—4.9 **5 Claims**



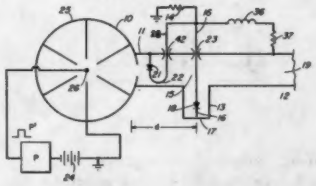
A low noise, cooled or uncooled parametric amplifier especially suited for radio astronomy receivers. The amplifier employes a novel diode mount, a pump, an idling filter, and an impedance transformer for a single ended amplifier so as to produce large bandwidth and a wide tuning range.

3,718,867

NOISE LIMITERS FOR ELECTRONIC HIGH-FREQUENCY OSCILLATORS

Robert Tenenholtz, Framingham, Mass., assignor to Microwave Associates, Inc., Burlington, Mass.

Filed Feb. 17, 1972, Ser. No. 227,176
Int. Cl. H03b *9/10*
U.S. Cl. 331—91 **9 Claims**



Pulse-operated electronic high-frequency oscillators, such as magnetrons, employed in a radio transmitting system which applies to the oscillator a constant DC

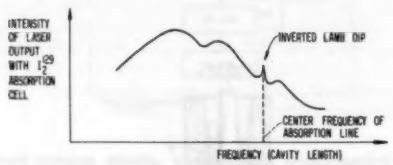
pedestal voltage of a first magnitude and which superposes on said pedestal voltage an operating voltage pulse of a second magnitude for generating RF transmission energy, are operated more stably with reduced noise by a quarter-wave transmission-line stub branchingly coupled to the output transmission line an optimized distance from the oscillator. The stub is open-circuited at its free end and a normally-open switch, which is closed in the presence of RF power above a certain threshold, is coupled across the open end.

3,718,868

I_2^{129} INVERTED LAMB DIP STABILIZED HE-NE LASER

Yoh-Han Pao, and Joseph Dale Knox, both of Cleveland Heights, Ohio, assignors to Case Western Reserve University, Cleveland, Ohio

Filed July 20, 1970, Ser. No. 56,520
Int. Cl. H01s *3/02, 3/22*
U.S. Cl. 331—94.5 **7 Claims**


INTENSITY OF LASER OUTPUT WITH I_2^{129} ABSORPTION CELL
INVERTED LAMB DIP
CENTER FREQUENCY OF ABSORPTION LINE
FREQUENCY (CAVITY LENGTH)

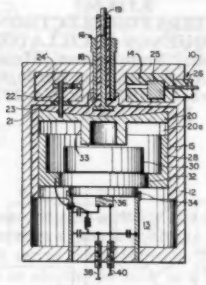
An extremely accurately resettable He-Ne laser including a gaseous I_2^{129} absorption cell in the laser cavity, and a method of stabilizing a He-Ne laser on an Inverted Lamb Dip of I_2^{129}. The laser gain tube and absorption cell are enclosed in a novel laser cavity apparatus. The cavity mirrors are positioned by novel mirror adjusting means which permits the laser to be tuned very quickly.

3,718,869

MICROWAVE OSCILLATOR WITH COAXIAL LEAKAGE OUTPUT COUPLING

Horst W. A. Gerlach, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed March 29, 1971, Ser. No. 128,843
Int. Cl. H03b *5/18, 7/14*
U.S. Cl. 331—96 **5 Claims**



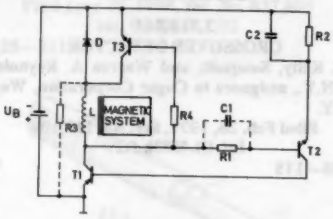
An improved coupling arrangement between a cavity resonator with associated microwave generator and the load. The cavity includes a radial line coupling in the form of a disc capacitively coupled to a planar load terminal. The disc is concave relative to the load terminal in order to effect a uniform impedance at all radial portions of the coupling and to provide the optimum impedance match.

3,718,870

DRIVING CIRCUIT FOR ELECTRO-MECHANICAL OSCILLATORS

Hans Keller, D78 Freiburg, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Aug. 12, 1971, Ser. No. 171,580
Int. Cl. H03b *5/30*
U.S. Cl. 331—116 M **6 Claims**



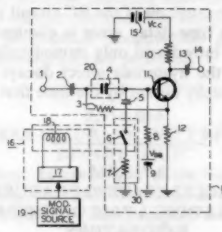
This invention relates to a circuit for driving an electromechanical oscillator (balance wheels, pendula, tuning forks) in an electronic watch. In a circuit with only one coil and two transistors, a forward biased diode is provided in series with the coil which results in sparing one of two batteries.

3,718,871

PHASE MODULATING DEVICE

Kinji Kawamoto, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 23, 1971, Ser. No. 165,558
Int. Cl. H03c *3/12*
U.S. Cl. 332—16 T **21 Claims**



A phase modulating device for an electronic musical instrument has at least one phase shifting means essentially composed of at least one resistive branch and at least one reactive branch. The resistive branch has a resistive element and a switching means connected in series. The switching means is turned on and off alternatively by an actuating means at a frequency higher than twice that of an input signal to be modulated. The ratio of an on-period plus an off-period to the on-period changes according to a modulating signal generated by a modulating signal source. The phase characteristic of the device is changed in response to the modulating signal by the switching means actuated by the actuating means in order that the input signal be phase modulated.

3,718,872

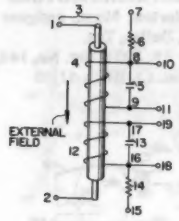
MAGNETIC MODULATING SYSTEM

Shinjiro Takeuchi, Toda, Japan, assignor to Mishima Kosan Co., Ltd., Kitakyushu, Fukuoka Prefecture, Japan

Filed June 7, 1971, Ser. No. 150,532
Claims priority, application Japan, Dec. 3, 1970, 45/107,018
Int. Cl. H03c *1/00*
U.S. Cl. 332—51 R **1 Claim**

A magnetic modulating system has a magnetic core and two resonant circuits which are supplied with an

alternating exciting current and an input signal. An alternating driving magnetic field is applied to the magnetic core and an alternating bias current is applied to a nonlinear inductance element of a differential output circuit

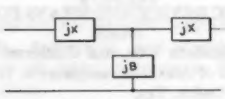


consisting of two resonant circuits composed of the nonlinear inductor and a condenser. The output signal of the differential output circuit can be controlled according to the input signal so as to modulate the output signal with high sensitivity by means of a very small input signal.

3,718,873
PHASE SHIFTER HAVING AT LEAST ONE T-SECTION LC CIRCUIT

Robert V. Garver, Boyds, Md., assignor to the United States of America as represented by the Secretary of the Army

Filed June 28, 1971, Ser. No. 157,518
Int. Cl. H01p *1/18;* **H03h** *7/34*
U.S. Cl. 333—31 R **3 Claims**



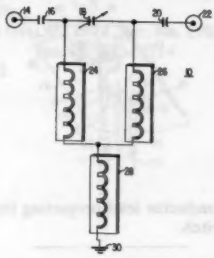
The present invention sets forth design criteria and generic LC circuit configurations for two types of phase shifters. The first type accomplishes variable phase shifting by employing a T-section circuit using fixed inductors and variable capacitors in the series leg of the circuit while a parallel connection of fixed inductor and variable capacitor exists in the shunt leg of the circuit. In the second type, digital phase shift is accomplished by sequentially switching between low and high pass T-section filters.

3,718,874
ETCHED INDUCTANCE BANDPASS FILTER

Robert B. Cooper, Jr., Oklahoma City, Okla., assignor to Edwin J. Sossen, Oklahoma City, Okla. a part interest

Filed Dec. 29, 1970, Ser. No. 102,450
Int. Cl. H01p *1/20, 3/08;* **H03h** *7/14*
U.S. Cl. 333—73 S **13 Claims**

A bandpass filter of one or more stages using etched inductors and designed for use in the VHF or UHF ranges is disclosed. Three etched inductors are used in each stage, and a variable capacitor is used to tune the stage. Alternatively, the variable capacitor may be replaced by a fixed capacitor, and a variable inductor may be substituted for one of the fixed inductors. Coaxial cable may be used to couple stages together. A modified filter stage is also disclosed to simplify tuning

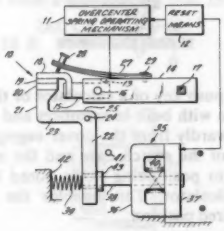


procedures when filters having three cascaded stages are assembled.

3,718,875
CURRENT LIMITING CIRCUIT BREAKER WITH MAGNETIC LATCH

Frank W. Kussy, Haverford, and Gustave E. Heberlein, Jr., King of Prussia, both of Pa., assignors to ITE Imperial Corporation, Philadelphia, Pa.

Filed July 2, 1971, Ser. No. 159,171
Int. Cl. H01h *73/00*
U.S. Cl. 335—18 **9 Claims**



A very fast opening current limiting circuit breaker is provided by utilizing a permanent magnet latch to maintain a semi-stationary contact in its operative position against the force of a biasing spring tending to move this contact to an inoperative position in which it is disengaged from the movable contact and is not engageable by the latter. The permanent magnet latch is released by a bucking flux generated in response to detection, by a monitoring means, of a current rate of rise in the circuit breaker which exceeds a predetermined value.

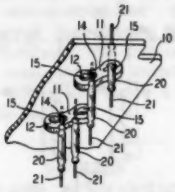
3,718,876
SEALED CONTACT MATRIX SWITCH HAVING A FLEXIBLE MEMBRANE AT A CROSSPOINT OPENING

Roger Florin Fletcher, Columbus, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed March 15, 1972, Ser. No. 234,909
Int. Cl. H01h *67/30*
U.S. Cl. 335—152 **8 Claims**

A flexible membrane is disclosed which extends over an aperture in a support plate in an electromagnetic sealed contact matrix or ferreed type switch. The ferreed switch includes at least one circuit path element and the flexible membrane

joins the circuit path element to the support plate and extends the circuit path element over the aperture to a point of rigid

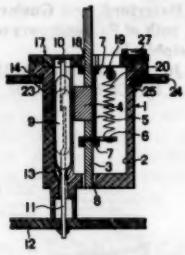


contact with a conductor lead projecting from an associated sealed contact switch.

3,718,877
SWITCH FOR PUSH KEY

Akira Matsushima, Chiba, Japan, assignor to Kabushiki Kaisha Hattori Tokeiten, Tokyo, Japan

Filed Sept. 16, 1971, Ser. No. 181,080
Claims priority, application Japan, Sept. 22, 1970, 45/93517
Int. Cl. H01h *9/08, 3/12*
U.S. Cl. 335—205 **6 Claims**



A switch for a push key of a calculator or the like comprising, a switch case with built-in members and a cover. Hooks projecting downwardly from the cover engage with edges of an upper flange of the switch case and the extreme ends of said hooks fit into positioning holes bored in a supporting plate on the calculator. This enables the key-top to be mounted at a desired position.

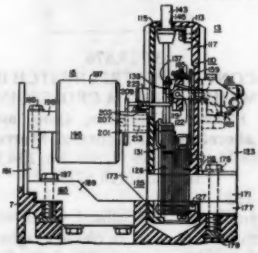
ERRATUM

For Class 337—94 see:
Patent No. 3,718,162

3,718,878
FUSED CIRCUIT BREAKER

James C. Wilson, Beaver, Pa., assignor to Matsushita Electronics Corporation, Osaka, Japan

Filed March 8, 1972, Ser. No. 232,794
Int. Cl. H01h *85/50*
U.S. Cl. 337—7 **10 Claims**

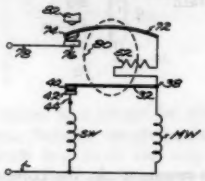


A multi-pole fused circuit breaker, of the type comprising current limiting fuses and a removable enclosed multi-pole trip device, comprises improved coordinating means for tripping the breaker when any of the fuses is actuated.

3,718,879
APPARATUS FOR STARTING AND PROTECTING OF ELECTRICAL MOTORS

Frederick G. Perry, Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 19, 1971, Ser. No. 144,959
Int. Cl. H01h *61/06*
U.S. Cl. 337—95 **17 Claims**

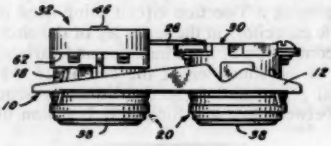


A combined relay and protector is shown particularly suitable for starting and protecting electrical equipment having a main winding and a start winding comprising two thermal elements mounted along side one another with a combination heater located in heat transfer relation with both elements. A preferred embodiment shows one of the thermal elements as a creep acting blade connectable to the start winding and the other thermal element as a snap acting disc connectable to deenergize the motor. A second embodiment includes a shunt heater connected across the creep acting blade.

3,718,880
THERMOSTATIC DEVICE AND MEANS FOR MOUNTING SAME

John Pringle, Elizabeth Vale, and Guillermo Eugene Pecker, Elizabeth, both of Australia, assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 836,354, June 25, 1969, Pat. No. 3,609,622. This application Nov. 4, 1970, Ser. No. 86,959
Int. Cl. H01h *37/04*
U.S. Cl. 337—380 **5 Claims**



A thermostatic device including a housing containing a bimetallic disc or strip which engages a cruciform shaped member, the cross arm of which engages a pair of pins which bear against leaf spring-type movable contact arms while the stem of the cruciform shaped member can form reset means providing a simple means for resetting the disc. Means for mounting the thermostatic device include a plate supporting a plurality of springs, each spring in turn urging a housing of the thermostatic device in a direction away from the plate of the device so that when the plate is secured to a surface the temperature of which is to be sensed, the springs urge the thermostatic housing into contact with the surface.

3,718,881

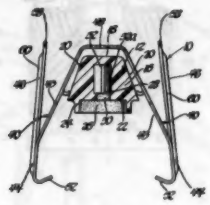
DETACHABLE FASTENING CLIP

Roy G. Szanny, Hubbard, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed March 27, 1972, Ser. No. 238,383

Int. Cl. H01c 7/04

U.S. Cl. 338—22 4 Claims



This disclosure relates to a one-piece detachable fastening clip for retaining two mating bodies in engagement with each other. The clip comprises two integral and resilient bent arm members which terminate in free ends and which have tangs struck therefrom and which are bent inwardly toward each other for receiving and retaining one of the mating bodies between the arm members. The free ends of the arm members are bent inwardly toward each other, and handles or control arms are struck from the arm members and bent outwardly therefrom and extend away from the free ends. The free ends are deflected outwardly away from each other and against the self-biasing force of the arm members when the control arms are pinched toward each other to thereby allow the other of the mating bodies to be received between the arm members and to mate with the one mating body. The inherent biasing forces of the arm members causes the free ends to move inwardly when the control arms are released to detachably engage the other mating body.

3,718,882

MAGNETIC SWITCHING APPARATUS

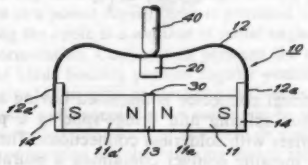
Noboru Masuda, Kawaguchi, and Tunekazu Kobayashi, Kawasaki, both of Japan, assignors to Denki Onkyo Co. Ltd., Tokyo, Japan

Filed Oct. 23, 1970, Ser. No. 83,302

Claims priority, application Japan, Oct. 25, 1969, 44/101034; Oct. 25, 1969, 44/101035

Int. Cl. H01c 7/16

U.S. Cl. 338—32 H 11 Claims



A switching apparatus comprised of a base containing two magnets, the same poles of which are coupled, a magnetic frame which is extended across both ends of the two magnets to form an endless magnetic loop in conjunction with the base, a galvano-magnetro effect device which is positioned on the coupled portion of the magnetic poles of the base so that the magnetic flux of the two magnets is concentrated on the galvano-magnetro effect device when the galvano-magnetro effect device is magnetically short-circuited at the middle portion of the frame.

3,718,883

ELECTRICAL COMPONENTS WITH FLEXIBLE TERMINAL MEANS

Abraham Berman, Tel Aviv, Israel, and George V. Gerber, Chester Springs, Pa., assignors to Vishay Intertechnology, Inc., Malvern, Pa.

Filed Oct. 15, 1971, Ser. No. 198,552

Int. Cl. H01c 1/14

U.S. Cl. 338—322 12 Claims

Improved means of attaching electrical connectors to miniaturized electrical components are disclosed. Flexible leads separately attached to the front of an electrical component are attached at their opposite ends to more rigid electrical connectors on the reverse side of the electrical component. The electrical connectors and the electrical component are preferably bonded together for improved stability. The resulting electrical component is typically surrounded with at least one protective covering.

3,718,884

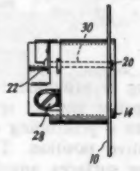
GROUNDED FLANGED WIRING DEVICE

Luther M. Sheldon, Cranston, R.I., assignor to General Electric Company

Filed June 24, 1971, Ser. No. 156,180

Int. Cl. H01r 3/06

U.S. Cl. 339—14 R 1 Claim



A grounded flanged wiring device is provided in which the grounding is achieved with reliability and economy by incorporating a grounding strap into the grounding line of the connector and using the structural support member to effect a grounding connection to a metal flange and from this flange to the housing of an instrumentality to be grounded.

3,718,885

MULTIPLE CONNECTOR

Hendrik Dorjee, and Jan Lesterhuis, both of Emmasingel, Eindhoven, Netherlands, assignors to North American Philips Co., Inc., New York, N.Y.

Continuation of Ser. No. 696,822, Jan. 10, 1968, abandoned. This application May 12, 1970, Ser. No. 37,411

Claims priority, application Netherlands, Jan. 14, 1967, 6700633

Int. Cl. H01r 13/64, 13/26

U.S. Cl. 339—17 LC 4 Claims

A connector assembly for securing a printed circuit board into a module. A multiple pin connector is attached to a plate

or circuit board within a module. A circuit board with a female connector attached thereto is provided. The connector

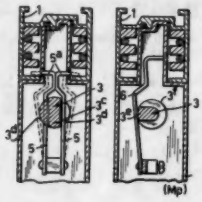
structure provides a compact, reliable and economical connector assembly.

3,718,886

CONNECTION PLUG FOR A CURRENT SUPPLY RAIL

Hansmartin Hoffmeister, Ludenscheid, Germany, assignor to Oy Nokia AB Finnish Cable Works, Helsinki, Finland

Filed June 1, 1970, Ser. No. 42,257
Claims priority, application Germany, May 31, 1969, P 19 27 940.4
Int. Cl. H01r *9/00*
U.S. Cl. 339—21 R **9 Claims**



A connection plug is provided for a current supply rail. The plug comprises contact springs actuated by a control shaft between a protruding contact position and a retracted inoperative position. The control shaft is formed with guiding surfaces angularly displaced with respect to each other so that the contact springs are selectively actuated and brought to protruding contact position by the control shaft.

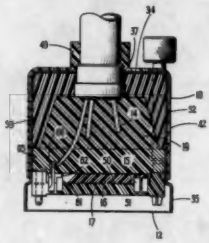
3,718,887

CONNECTOR

William E. Solomon, Raynham, and Arthur V. Healey, Eastondale, Mass., assignors to Component Manufacturing Service, Inc., Component Park, West Bridgewater, Mass.

Filed June 14, 1971, Ser. No. 152,669
Int. Cl. H01r *13/40*
U.S. Cl. 339—92 M **17 Claims**

An electrical connector has a housing formed of radio frequency interference shielding. A plural lead, shielded cable is joined to the housing with an end passing therein. Leads of the cable are joined to individual connector pins located at a connection end of the housing. Premolded insulating fillers are used to fill some of the space within the housing in conjunction with in situ molded insulating material. The connector pins are preferably mounted on a terminal board with locking means for preventing displacement of the connector pins during in situ molding and thereafter. A strain relief member is preferably molded over the cable and housing for strain relief and environmental control. Preferably jack screw means are fixed in position for rotation within the housing to secure the connector to an attached terminal board or similar mating connector.

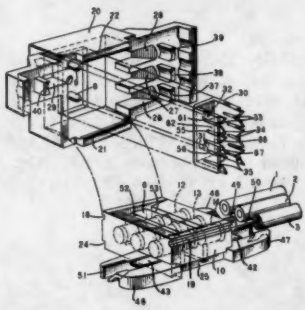


3,718,888

UNIVERSAL CONNECTOR FOR CABLE CONDUCTORS

John Paul Pasternak, Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Jan. 4, 1971, Ser. No. 103,687
Int. Cl. H01r *11/20*
U.S. Cl. 339—98 **10 Claims**



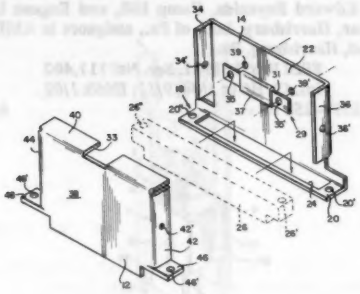
An electrical connector is disclosed having a capability for both butt-splicing and bridge-splicing a plurality of insulated wires with solderless connections. The connector includes a metallic contact containing a plurality of tapered slots, the sidewalls of which are formed to pierce the insulation on the wire. The portion of the contact at the entrance to the slots is formed into a shoulder transverse to the axis of the slots. As a result, when insulated wires are forced into the slots of the contact, the insulation is pierced, the shoulder holds the insulation to prevent it from being drawn into the slot, and positive electrical contact is established between the conductors of the wires and the metallic contact. A retainer is also provided to hold the wires in place prior to being forced into the slots and to provide mechanical support for the wires after the connection is made.

3,718,889

TERMINAL BLOCK COVERING MEANS

Kenneth D. Bartlett, R.R. No. 1, Box 101, Camby, Ind.

Filed March 2, 1971, Ser. No. 120,262
Int. Cl. H01r *13/58*
U.S. Cl. 339—103 R 5 Claims



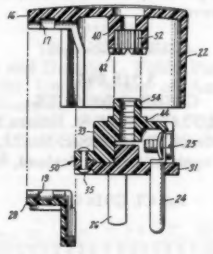
Cooperating first and second case members provide a compartment enclosing the terminals of a terminal block and the electrical leads connected thereto, one of the case members having a shelf for carrying the terminal block.

3,718,890

DIRECTION LOCK FOR ANGLE PLUG

Luther M. Sheldon, Cranston, R.I., assignors to General Electric Company

Filed July 29, 1971, Ser. No. 167,390
Int. Cl. H01r *13/58*
U.S. Cl. 339—107 1 Claim



An angle cap having power blades extending generally at right angles to a power supply cable is provided with a means for disposing the cable at a number of radial angles relative to the blade orientation. Cooperation between the cover of the cap and the blade housing permits angular positioning of the blades relative to the cable so that once the blades are inserted in a stationary wall receptacle the cable will be positioned to lie in a preselected downward or sideward or upward orientation. The cooperating angular indexing means includes an integrally formed collar of the cover and integrally formed post of the blade housing.

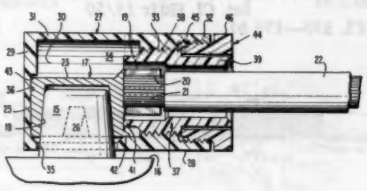
3,718,891

BATTERY TERMINAL CONNECTOR AND HOUSING MEANS

Richard R. Wening, 2113 N. Eastside, Santa Ana, Calif. 92701

Filed June 21, 1971, Ser. No. 154,737
Int. Cl. H01r *11/26*
U.S. Cl. 339—116 R 10 Claims

A battery terminal post receives thereon a connector cap formed of a similar metal to avoid electrolysis and corrosion. The terminal post and cap are received within a non-metallic corrosion-resistant housing and the housing in turn receives a threaded sleeve for applying clamping pressure to the connector cap and a locking nut to prevent movement of the sleeve. The housing, connector cap and pressure-applying sleeve have interfitting parts which resist movement of the cap while the sleeve is being tightened and thereafter.

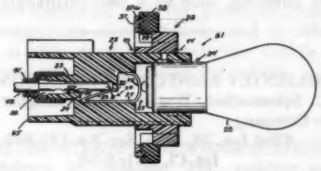


3,718,892

LAMP SOCKET

James P. Burgess, Brighton, and Melvin W. Polkinghorn, Livonia, Mich., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sept. 25, 1969, Ser. No. 861,113
Int. Cl. H01r *13/32, 13/66*
U.S. Cl. 339—126 R 35 Claims



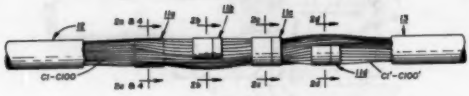
A lamp socket structure adapted to lockably receive wire harness terminal plugs therein and maintain such terminals in positive wire harness strain-free contact with bulb contact elements positioned within the lamp socket structure. An annular flange, a compression ring and annular shoulders provided on the lamp socket body housing cooperate to provide fool-proof housing panel orientation during installation and positive pressure interlock with the panel housing regardless of housing panel thickness or material. The lamp socket structure has a built-in fibre optic channel which provides one standard ferrule position for all focal lengths and provides for quick insertion, precise aiming and positive locking of the fibre optic wire. The relative axial positioning of the annular flange, compression ring and annular shoulders on the lamp socket body housing can be changed so that the lamp socket structure is axially adjusted relative to the housing panel, thus providing for a variety of focal ranges while maintaining the same basic internal structural features and component interrelationship within the lamp socket structure. A unique boot seal cooperates with socket extension towers on the lamp socket structure to provide for positive individual wire lead sealing.

3,718,893

MULTIPLE CONNECTOR ASSEMBLY SYSTEM FOR INTERCONNECTING STRANDS OF CABLES WITHOUT CREATING A SUBSTANTIALLY ENLARGED SECTION THEREIN

Albert Holler, Mount Prospect, Ill., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed July 30, 1971, Ser. No. 167,650
Int. Cl. H01r *13/50*
U.S. Cl. 339—176 M 5 Claims



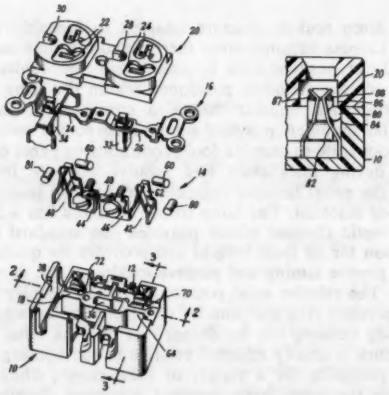
A system for interconnecting respective electrical conductors of two cables of substantially equal radius, without creating a substantially enlarged section in the cables, includes a plurality of longitudinally spaced connector assemblies. Each connector assembly includes first and second plug members connected to respective groups of conductors and connectable to one another to interconnect the conductors. A first portion of each plug member is defined by an outwardly facing curved surface generated by a radius substantially equal to the radius of the cables. A second portion of each plug member is disposed radially inward with respect to the circumference of the cables to define an area in which remaining electrical conductors of the cables can bypass the connector assembly to the other connector assemblies, without projecting substantially radially outward beyond limits defined by the circumference of the cables. Thus, each connector assembly and its associated bypassing conductors have a combined peripheral configuration substantially corresponding in size and shape to that of the cables. The resulting cable connection is enclosed in a protective covering, such as a heat-shrinkable sleeve.

3,718,894

RESILIENTLY REINFORCED NEMA CONTACT

Walter C. Schumacher, Warwick, R.I., assignor to General Electric Company

Filed Jan. 29, 1971, Ser. No. 110,892
Int. Cl. H01r *9/08*
U.S. Cl. 339—217 PS 3 Claims



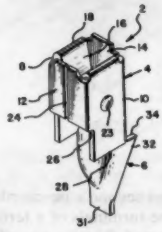
Improved contact pressure on power blades of an electrical cap is provided by an electrical contact formed to accept power blades in two orientations at right angles. The contact is made of a strip of metal of high conductivity and low spring properties and is reinforced by a resilient element acting between the contact and insulating housing.

3,718,895

CONNECTING DEVICE FOR PRINTED CIRCUIT BOARD

Charles Edward Reynolds, Camp Hill, and Eugene Leonard Gombar, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 1, 1971, Ser. No. 111,402
Int. Cl. H01r *5/04*, *9/12*; H05k *1/02*
U.S. Cl. 339—258 R 6 Claims



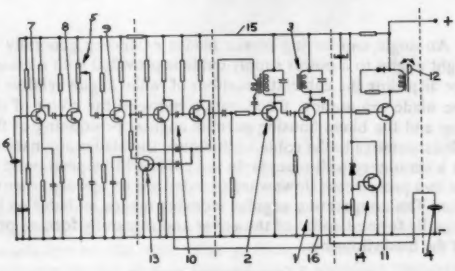
Connecting device which is adapted to be mounted on a printed circuit board comprises a box-like receptacle portion which is adapted to receive an electrical lead and a mounting portion extending from one side of the receptacle portion. The mounting portion is cupped along its length in the general form of a hemi-ellipsoid. The interior of the ellipsoidal mounting portion faces laterally with respect to the box-like receptacle portion and is so dimensioned that it will fit snugly within a hole in a printed circuit board. The relationship of the mounting portion to the receptacle portion is such that solder flow into the receptacle portion, when the board is dip soldered or wave soldered is prevented.

3,718,896

GUIDING DEVICES

Geoffrey C. Mowat, 37 Cliff Road, St. Heliers, New Zealand

Filed March 27, 1970, Ser. No. 23,283
Claims priority, application New Zealand, March 31, 1969, 155980
Int. Cl. G01s *9/68*
U.S. Cl. 340—1 R 5 Claims



A blindman's cane has contained within it a transmitter that transmits pulses of energy in a directional manner and also a receiver which accepts the first returned pulse of those transmitted and rejects all others for a predetermined period. The first returned pulse activates a device such as a vibrator to give the user an indication of an approaching object. The rate of vibration of the vibrator alters to give an indication of the closeness of the object.

3,718,897
HIGH FIDELITY UNDERWATER MUSIC PROJECTOR

Frank R. Abbott, 3953 Wildwood Road, San Diego, Calif. 92107

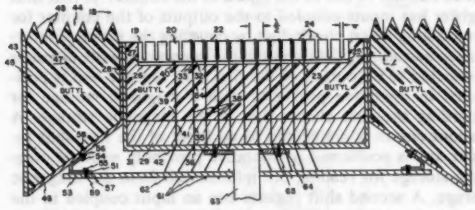
Filed May 27, 1971, Ser. No. 147,573
Int. Cl. H04b *13/00*
U.S. Cl. 340—8 R 10 Claims

A ferroelectric stack, polarized for axial excursions to transfer signals representative of acoustic energy, is held in compression by cap members mounted on its opposite ends to transfer received or projected acoustic energy through circumferentially enclosing longitudinally running ribs. Because of their cross-sectional configuration and because they are coupled in a particular angle with respect to the cap members, the stack's axial excursions are converted to magnified radial displacements when the transducer is used in the transmit mode. In addition, greater sensitivity to impinging acoustical energy is provided by the large receiving surfaces presented by the outer surfaces of the ribs when the transducer functions in the receive mode.

3,718,898
TRANSDUCER

Rufus Lee Cook and Donald L. Folds, Panama City, Fla., assignors to the United States of America as represented by the Secretary of the Navy

Filed Dec. 13, 1971, Ser. No. 207,266
Int. Cl. H04b *13/00*
U.S. Cl. 340—10 12 Claims

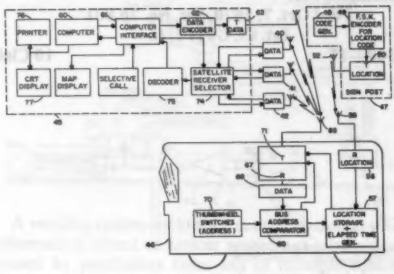


An electroacoustical transducer is disclosed which incorporates a diced piezoelectric crystal backed by a phenolic disc, a resilient pressure release Butyl rubber cup, an aluminum block, and a metallic cup that contains said crystal, disc, rubber cup, and aluminum block. Electrodes are connected to all of the active end faces and the base of said diced piezoelectric crystal, and electrical wire conductors are connected to each of said face electrodes and said base electrode. A Butyl rubber baffle extends around and radially from said diced piezoelectric crystal, and a liquid acoustical lens is effectively associated therewith. A mounting pipe and flange are effectively connected to said lens and metallic cup for the mounting thereof on a utilization apparatus.

3,718,899
VEHICLE MONITORING SYSTEM INCLUDING AUTOMATIC PRESELECTION OF DESIRED SATELLITE RECEIVER

Thomas J. Rollins, Arlington Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Apr. 5, 1971, Ser. No. 131,121
Int. Cl. G08g *1/12*
U.S. Cl. 340—23 16 Claims

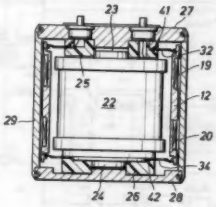


A satellite receiver selection system for a vehicle monitoring system where the vehicle to be monitored travels along a predetermined route. The vehicle includes storage circuitry for storing information signals indicative of its position as it moves along the route, and a transmitter in the vehicle transmits the information signals at particular times. A number of satellite receivers are located along the route for receiving the vehicle's transmitted information signals. These satellite receivers are coupled to a central control station that includes a memory or storage device containing information as to the schedule and position of the vehicle as it travels along the predetermined route. The information signals are coupled from the satellite receiver stations to the central control station where they are compared with the stored information to develop a comparison signal that is used to selectively operate the satellite receiver nearest the vehicle at the time of the next transmission from the vehicle.

3,718,900
SEISMOMETER WITH SPRING SPIDER SUSPENSION

Robert C. Holmes, Jr., Houston, Tex., assignor to Mark Products, Inc., Houston, Tex.

Filed April 15, 1970, Ser. No. 28,675
Int. Cl. G01v *1/16*; F16f *1/34*
U.S. Cl. 340—17 8 Claims



Spring spiders support one element of a seismometer, the coil-mass assembly, for movement relative to another element, the magnet assembly. The outer portion of each of the spring spiders is connected to the coil-mass assembly by outwardly extending tabs integrally connected to the outer portion. The outer portion and tabs are bent up and down to position the tabs successively on opposite sides of an annular

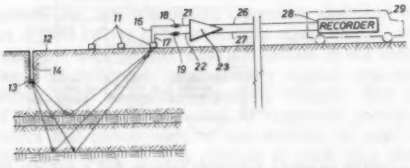
flange on the coil-mass assembly. This type of connection allows the elements to rotate relatively around their central concentric axes and also reduces substantially the transverse bending of the outer portion of the spiders as the spring arms of the spiders flex, thereby substantially reducing the distortion in the output signal due to such bending.

3,718,901

TRANSDUCER AMPLIFIER SYSTEM

Warren B. Davis, Houston, Tex., assignor to Superior Oil Company, Houston, Tex.

Filed Oct. 7, 1970, Ser. No. 78,831
Int. Cl. G01v 1/16
U.S. Cl. 340—17 **10 Claims**



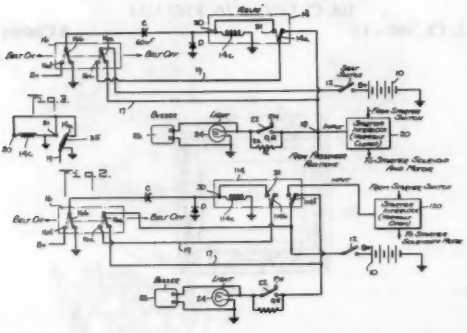
A transducer amplifier system including a transducer having connectors affixed to the leads thereof and an amplifier circuit having mating connectors for selectively being connectable to said transducer, the amplifier circuit including a battery and semiconductive switching facilities for automatically connecting the battery to the amplifier when the transducer is connected to the amplifier and for disconnecting the battery from the amplifier when the transducer is disconnected to avoid battery drain.

3,718,902

VEHICLE SEAT BELT ALARM AND STARTER INTERLOCK CONTROL SYSTEM

Gerald Robert Pearsall, Farmington, Mich., assignor to Irvin Industries Inc., Greenwich, Conn.

Filed Dec. 6, 1971, Ser. No. 205,209
Int. Cl. B60r 21/10
U.S. Cl. 340—52 E **16 Claims**



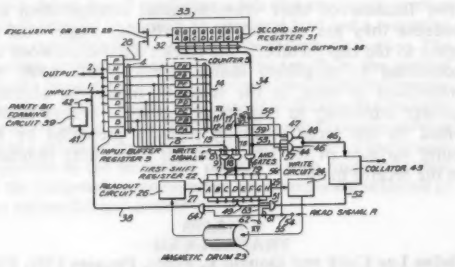
A source of voltage is connected to a starter interlock through a normally open seat switch and a first normally closed seat belt actuated switch. Closing of the seat switch when a passenger sits connects the voltage to the interlock and disables the starter mechanism. Buckling the seat belt opens the seat belt actuated switch and enables the starter mechanism. The voltage is also connected to the starter interlock through the series combination of the normally opened seat switch and a normally closed relay switch. Battery voltage is coupled to the relay switch coil through a second normally open seat belt actuated switch and a capacitor in series. Buckling of the seat belt causes a pulse of current to be transmitted through the capacitor to energize the relay coil thereby opening the normally closed relay switch. A holding circuit through the seat switch maintains the relay switch open. Thus, the seat belt must be buckled after sitting down in order to provide the pulse of current to initially close the relay switch and to provide the continuing current to keep the relay closed. While the vehicle is in use, a warning buzzer and warning light are actuated by the same voltage source which disables the starting circuit.

3,718,903

CIRCUIT ARRANGEMENT FOR CHECKING STORED INFORMATION

Mitsuo Oiso, and Yasuo Endo, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 670,545, Sept. 26, 1967, abandoned. This application Nov. 18, 1970, Ser. No. 90,670
Int. Cl. G06f 11/10
U.S. Cl. 340—146.1 AL **9 Claims**

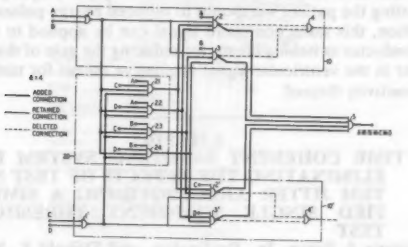


A counter counts specific bits in each of the digits of information and indicates specific bits to form check bits. An input supplies stored information of N digits each including a determined number of bits to the inputs of the counter. A first shift register has inputs coupled to the outputs of the counter for determining a first check digit by counting the supplied information and storing the output of the counter. A write circuit is connected to an output of the first shift register and is positioned in operative proximity with a magnetic storage for recording the first check digit in the magnetic storage. A readout circuit is connected to an input of the first shift register and is positioned in operative proximity with the magnetic storage for reading out information from the magnetic storage. A second shift register has an input coupled to the input and outputs coupled to the inputs of the first shift register for determining a second check digit by counting determined digits of the supplied information and transferring the counted determined digits to the first register. The write circuit records the second check digit in the magnetic storage. A collator has inputs coupled to the input and to the outputs of the counter and of the first shift register for collating the first check digit in the output of the counter with the first check digit read out from the magnetic storage and for collating the second check digit in the output of the second shift register with the second check digit read out from the magnetic storage. A feedback coupled between the outputs of the first shift register and the input adds parity bits to the stored information. An output connected to the feedback provides the stored information with the included parity bits.

3,718,904
NAND GATE REALIZATION OF THE N-INPUT PARITY FUNCTION

Andrew Frederick Bulfer, Oceanport, and Enn Tammaru, Matawan, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Sept. 1, 1971, Ser. No. 176,819
Int. Cl. G06f *11/10*
U.S. Cl. 340—146.1 AG **10 Claims**

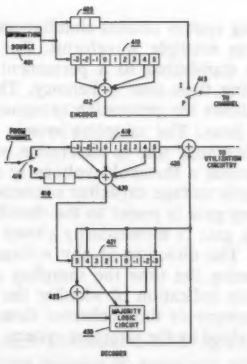


A generalized, recursive, design procedure is taught for synthesizing a parity checking circuit comprised solely of NAND gates and having any arbitrary, integral number *k*, greater than three, of parallel, binary inputs. Increased operating speed is achieved by interconnecting plural logic levels together through a level of interactive NAND gate logic to reduce the number of logic levels which are normally required to implement such a circuit.

3,718,905
ERROR CORRECTING SYSTEMS UTILIZING ONE-HALF OPTIMUM DIFFUSE CODES

Shih Yung Tong, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 1, 1971, Ser. No. 176,823
Int. Cl. G06f *11/12*
U.S. Cl. 340—146.1 AQ **9 Claims**

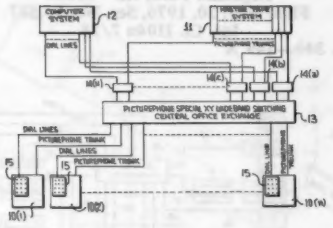


Sequences of information bits, encoded in an orthogonalizable convolutional code of rate ½ and transmitted via a communication channel, are decoded to correct *t* random errors and bursts of B blocks where each block is 2 bits in length. The interconnections between an information bit shift register in the encoder and decoder and their respective parity check bit generating circuits and between a syndrome register and a majority logic circuit in the decoder are specified by relatively simple formulas which are functions of *t* and B. The apparatus of the present invention is optimized for correcting random errors.

3,718,906
VENDING SYSTEM FOR REMOTELY ACCESSIBLE STORED INFORMATION

Robert W. Lightner, 85 N. Atlantic Avenue, Cocoa Beach, Fla.

Filed June 1, 1971, Ser. No. 148,714
Int. Cl. G11b *15/02*; H04m *17/02*; H04q *9/00*
U.S. Cl. 340—147 R **23 Claims**

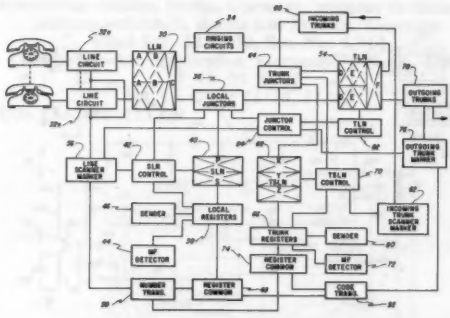


A vending system includes a central station at which various information stored on master recordings can be selectively accessed by purchasers from any of multiple remote vending machines, the accessed information being reproduced on cartridge-type storage media at that vending machine. The cartridge, upon receiving all of the selected information, is ejected from the vending machine for the permanent use of the purchaser. In a preferred embodiment the master recording medium comprises a plurality of endless master tapes continuously driven by a common capstan. The master tapes may contain commercially recorded music which is selectively transferred to a magnetic tape cassette at a vending machine. The master tapes may contain complete albums of recordings which are automatically produced on the cassette, or alternatively may contain a variety of solo recordings which can be individually selected to create a new album of the purchaser's choice.

3,718,907
SCANNER CIRCUIT

Otto Altenburger, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed June 15, 1971, Ser. No. 153,234
Int. Cl. H04q *3/00*
U.S. Cl. 340—147 R **15 Claims**



The scanner circuit includes a counter that provides sequential scanning pulses. In response to a current pulse, the counter circuit is stopped. The counter is enabled to start a preset number of scanning or counting cycles in a scanning sequence. Prior to the first scanning cycle, a memory circuit presets the counter. At the end of the first scanning cycle the counter presets the memory circuit. The arrangement is such that the first scanning cycle of each new scanning sequence begins at the count at which the counter stopped at the end of

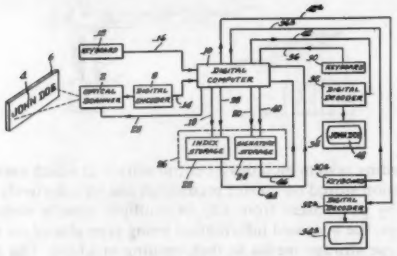
the first scanning cycle of the prior counting sequence. If no current pulse is detected when the counter reaches a preset count limt a preset number of times in one scanning cycle, the scanner circuit is reset.

3,718,908

SIGNATURE STORAGE AND RETRIEVAL SYSTEM

Richard W. Bloomstein, 1443 Cavell, Highland Park, Ill. 60035

Filed Nov. 30, 1970, Ser. No. 93,587
Int. Cl. H04n *7/18*
U.S. Cl. 340—149 A **5 Claims**



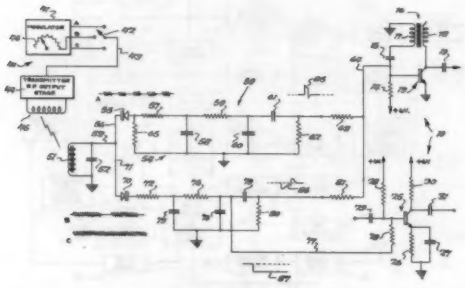
A signature storage and retrieval system comprises an arrangement where signatures are optically scanned and digitally coded, and together with digitally coded correlative information, such as bank account numbers, are stored on data processing recording media. A signature may be verified by keying into the data processing file the bank account number or other correlative information code which causes the data processing equipment to retrieve the signature data which is then decoded, and the signature is displayed on the screen of a cathode ray tube.

3,718,909

RATE CONTROLLER AND CHECKER FOR PULSE GENERATOR MEANS

Wilson Greatbatch, Clarence, N.Y., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed June 18, 1970, Ser. No. 47,198
Int. Cl. A61n *1/36*
U.S. Cl. 340—167 A **6 Claims**



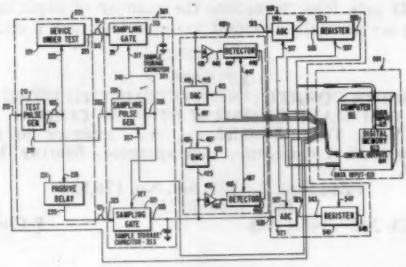
A remotely-operated control for and electrical pulse generating means, such as a cardiac pacer including timing means controlling the generation of pulses and signal responsive means for resetting the timing means in response to a ventricular electrical signal. A remote, portable transmitter selectively generates a plurality, preferably about three, radio frequency signals having different envelope durations, the signal of longest duration being a continuous or carrier wave signal. Coupled to the pulse generator or pacer is a circuit responsive to the radio frequency signals which rectifies, detects and filters them to produce corresponding command signals. Two of the command signals corresponding to the relatively shorter r.f. signals can be applied to the pacer oscillator in a manner increasing or decreasing the rate of pulse generation. The command corresponding to the continuous r.f. signal can be utilized to temporarily inhibit operation of the pacer signal responsive means to check the viability of this function. In addition, this command signal can be applied to a switching means to reduce the capacitance in the timing means to in turn reduce the width of the pacer output pulse for testing the patient's response to reduced energy pulses. In addition, this same command signal can be applied to a semiconductor switching means for reducing the gain of the amplifier in the ventricular signal responsive means for testing the sensitivity thereof.

3,718,910

TIME COHERENT SAMPLING SYSTEM FOR ELIMINATING THE EFFECTS OF TEST SYSTEM JITTER AND PROVIDING A SIMPLIFIED SINGLE TRANSIENT THRESHOLD TEST

Eugene J. Scray, Jr., Burlington, and Donald L. Wilder, Colchester, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 30, 1970, Ser. No. 76,914
Int. Cl. G06f *1/00*
U.S. Cl. 340—172.5 **11 Claims**



A sampling system obtains simultaneous time coherent samples from multiple waveforms. For processing, the samples are transferred to a permanent storage means, while retaining their time coherency. The retained time coherency allows the processing to remove the effects of test system jitter. The sampling system also provides a simplified threshold test to determine whether a single transient exceeds a threshold voltage at a predetermined time. A sample storage capacitor connected to the output of a sampling gate is preset to the threshold voltage and the sampling gate is momentarily closed at the predetermined time. The direction of any voltage change on the capacitor during the time the sampling gate is closed is detected as an indication of whether the threshold is exceeded. Simultaneous time coherent threshold determinations are obtained by the sampling system.

3,718,911

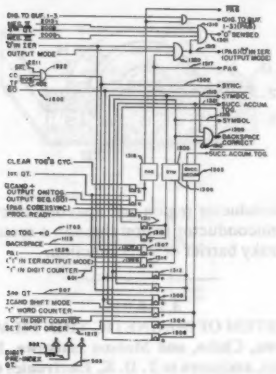
CARRIAGE-POSITION MODIFICATION OF EXTERNAL PROGRAM

Winsor Soule, Jr., Berkeley, and John Efstathiou, Oakland, Calif., assignors to SCM Corporation, New York, N.Y.

Original application Feb. 23, 1965, Ser. No. 434,265, now Patent No. 3,522,416. Divided and this application Mar. 24, 1970, Ser. No. 24,906
Int. Cl. G06f *9/04, 15/00*
U.S. Cl. 340—172.5 **9 Claims**

Controls for positioning data entry and for clearing instructions and data in an externally programmed com-

puter, particularly applicable to one having a typewriter as an input-output unit and a record reader as the pro-



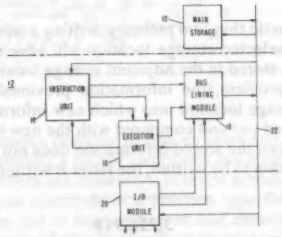
gram source. The novel controls provide interaction between the typewriter carriage and keyboard and the program in the reader.

3,718,912

INSTRUCTION EXECUTION UNIT

Leo J. Hasbrouck; Bill C. Madden, both of Saratoga; Robert P. Rew, San Jose, all of Calif.; Edward H. Sussenguth, Cary, N.C., and John R. Wierzbicki, Saratoga, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1970, Ser. No. 100,704
Int. Cl. G06f 9/19
U.S. Cl. 340—172.5 **23 Claims**



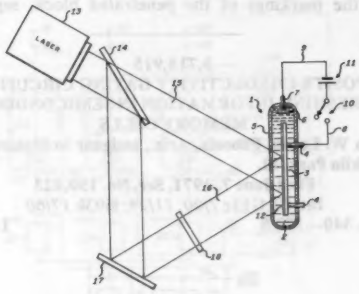
An execution system for instructions having source and sink operand designations includes an arithmetic unit, execution means for holding an instruction for controlling the arithmetic unit and a plurality of operand registers, each having tag means associated therewith for indicating the nature of data stored therein. Instruction modification logic, on the basis of indications of availability of the operand registers, inserts modified source and sink operand register designations in instructions which are then stored in an instruction register stack. Interlock logic controls the transfer of instructions from the instruction register stack to the execution means as a function of the source and sink operand register designations in the modified instructions and the data tags associated with the operand registers.

3,718,913

ERASABLE OPTICAL RECORDING SYSTEM

William T. Maloney, Sudbury, and James B. Thaxter, Townsend, Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 6, 1972, Ser. No. 241,720
Int. Cl. G11c 13/02
U.S. Cl. 340—173 CH **9 Claims**



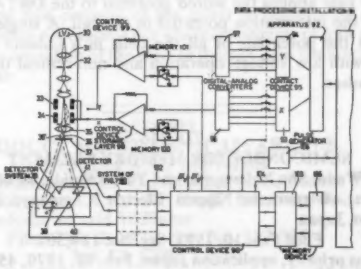
A method and apparatus of erasable optical recording wherein the apparatus comprises a sealed container filled with an electrolyte in which an anode and a cathode electrode are immersed, the anode being reactive with the electrolyte under a condition of applied direct current excitation while the cathode is essentially inert whereupon application of electrical excitation to the electrodes induces electrolytic action causing deposition of an oxide coating on the anode. Thereafter, with the electrical excitation removed, information is recorded on the oxide coating by light energy incident thereon causing vaporization of the coating at localized regions in proportion to the magnitude of the light intensity thereat for a given exposure time. Reapplying the electrical excitation causes erasure of the recorded information by depositing additional oxide coating material in the vaporized regions. Readout may be performed at any time between recording and erasing simply by illuminating the recorded coating in conventional manner with a readout optical beam.

3,718,914

DATA STORAGE SYSTEM UTILIZING PARTICLE BEAM FOR READING INFORMATION

Karl-Heinz Müller, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jan. 22, 1970, Ser. No. 4,914
Claims priority, application Germany, Feb. 3, 1969, P 19 05 894.7
Int. Cl. G11c 11/26, 11/42
U.S. Cl. 340—173 CR **9 Claims**



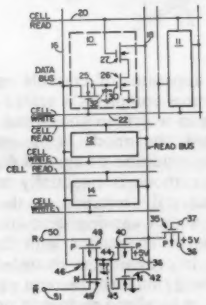
A data storage system comprises a particle beam which scans the data and a storage layer transparent to the beam.

The storage layer has markings each of which represents a corresponding data element. Electron beam deflecting means are arranged in the beam direction ahead of the storage layer. A detector device is provided behind the storage layer. The cross-section of the beam in the plane of the storage layer is such that it penetrates one component block of the storage layer having a plurality of markings, and projects the same enlarged onto the plane of the detector device. The detector device is designed so that it reads the markings of the penetrated block, separately.

3,718,915
OPPOSITE CONDUCTIVITY GATING CIRCUIT FOR REFRESHING INFORMATION IN SEMICONDUCTOR MEMORY CELLS

William W. Lattin, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 7, 1971, Ser. No. 150,423
Int. Cl. G11c *7/00, 11/24;* **H03k** *17/60*
U.S. Cl. 340—173 R **12 Claims**



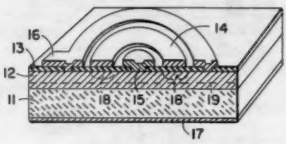
Circuit for refreshing information provided as different potentials in semiconductor cells of a dynamic metal oxide semiconductor (MOS) random access memory array with greater speed and less critical clock pulse timing. The circuit is also used for reading information from the cells. The circuit may be used in a memory with a plurality of cells provided on semiconductor chip, as for example, 1,024 cells arranged in 32 rows and 32 columns, each providing one information bit. The memory may be of the dual rail type or the single rail type, and is illustrated as a dual rail memory with a DATA bus which applies potentials to the cells in each column, and a READ bus for indicating the information in the cells. The cells may include silicon gate field-effect transistors (FET) which are all of the same conductivity type, with the circuit for refreshing the information being formed by devices of complimentary types. A first pair of complimentary MOS FET's form a pair of gates selectively rendered operative by the READ bus for applying one of the two potentials which form the information bits in the cells to an interim storage point. A transmission gate applies the stored potential to the DATA bus to refresh the information potential in the cell. A single circuit restores the potentials of all the cells in a column at high speed, with low voltage operation and non-critical timing of clock pulses.

3,718,916
SEMICONDUCTOR MEMORY ELEMENT

Toshio Wada; Sho Nakanama, and Tohru Sujide, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Feb. 10, 1971, Ser. No. 114,304
Claims priority, application Japan, Feb. 12, 1970, 45/12183
Int. Cl. G11c *11/40, 5/02, 11/00*
U.S. Cl. 340—173 R **9 Claims**

A semiconductor memory element for use in a memory device having high speed data read out. A semiconductor region of one conductivity type is provided on a substrate of an opposite conductivity. A first electrode is in ohmic contact

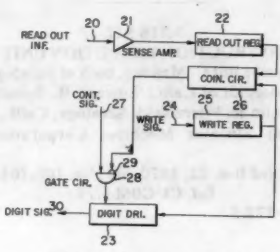


with the semiconductor region and a second electrode is coupled to the semiconductor region through a rectifying barrier such as a Schottky barrier or a PN Junction.

3,718,917
DRIVING SYSTEM OF MAGNETIC THIN FILM MEMORY

Shiro Nakagawa, Chiba, and Mutsuo Ishikawa, Nagareyama, both of Japan, assignors to T. D. K. Electronics Corporation, Tokyo, Japan

Filed March 15, 1971, Ser. No. 123,978
Claims priority, application Japan, March 23, 1970, 45/24298
Int. Cl. G11c *15/00, 11/14*
U.S. Cl. 340—174 TF **1 Claim**



WRITE DRIVE SYSTEM FOR ONE DIGIT LINE

In a magnetic thin film memory, writing a word or information into a selected storage location will adversely affect the information stored in the adjacent storage locations. To overcome this problem, the information previously stored in a selected storage location into which new information is to be written is read out and compared with the new information so that only when the stored information does not coincide with the information to be written, the latter is written.

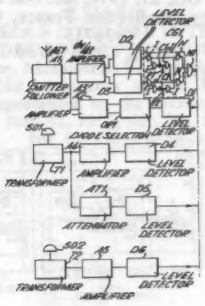
3,718,918
NUCLEAR EXPLOSION DETECTION SYSTEMS

Reginald Allan Fothergill; Reginald Frank Charles Bennett, both of Basingstake; Gerald Thomas Risley, Thatcham, and William Stanley Weeks, Tadley, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 1, 1969, Ser. No. 881,129
Int. Cl. G08b *21/00*
U.S. Cl. 340—213 R **17 Claims**

This nuclear explosion detection system receives the radiated transient radiofrequency signal and the fast-rising and slow-rising portions of the radiated transient optical signal, and indicates the occurrence of an explosion only if these signals satisfy selected criteria. The optical criteria include the relative durations of different parts of the optical signal and are checked by deriving time-intervals which include multiples of the durations of given parts of the optical

signal, these derived time-intervals being compared with the durations of other parts. The time-intervals are derived by feeding clock pulses at suitable repetition frequencies to reversible counters in one direction during the given parts of

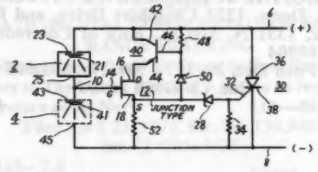


the signal, and subsequently feeding clock pulses at appropriate submultiples of those repetition frequencies to the counters in the reverse direction to return them to predetermined conditions.

3,718,919
IONIZATION SMOKE DETECTOR

Koju Sasaki, Tokyo; Akihiro Kobayashi, Fujisawa, and Naoki Takahashi, Yokohama, all of Japan, assignors to Nittan Company, Limited, Tokyo, Japan

Filed March 17, 1970, Ser. No. 20,353
Claims priority, application Japan, June 16, 1969, 44/46886; June 16, 1969, 44/46887
Int. Cl. G08b *17/10*
U.S. Cl. 340—237 S **2 Claims**



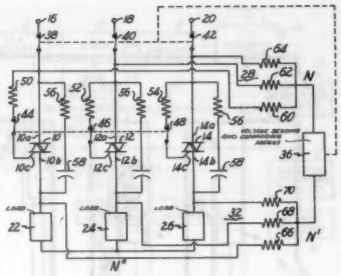
An ionization smoke detector having an open and a closed chamber each including a pair of electrodes and a radioactive source. The chambers are connected in series across a power supply and the gate electrode of a junction type field effect transistor is connected to the junction of said chambers. The drain-source circuit of the field effect transistor includes means for limiting the current in that circuit to maintain the gate leakage current below a predetermined minimum and thereby avoid erroneous indications of the presence and absence of smoke.

3,718,920
POWER CONTROL SYSTEM HAVING FAULT SENSING MEANS

Aime J. Grenier, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 21, 1971, Ser. No. 182,398
Int. Cl. G08b *21/00*
U.S. Cl. 340—248 E **15 Claims**

A system for controlling the supply of electrical power from a balanced polyphase power source to a load such as the phase windings of an electrical motor in which means are provided for sensing improper application of the power to the load. A plurality of selectively energizable A.C. power switches each having first and second power terminals and a control terminal are adapted to couple associated ones of the power terminals of the source to the load. A substantially non-reactive, high impedance line neutral sensing network having a junction defining a line neutral point is connected across the

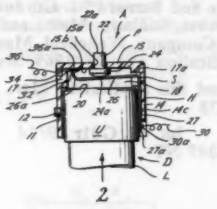


first power terminals of the A.C. power switches, while a similar load neutral sensing network having a junction defining a load neutral point is connected across the second power terminals of the A.C. power switches. Means are coupled between the line neutral junction and the load neutral junction for sensing a difference in electrical potential therebetween as an indication of system mis-operation.

3,718,921
DRIVER ALERTNESS ALARM SYSTEM

Anna D. Johnson, 1249 Blalock, suite 201, Houston, Tex.

Filed Oct. 13, 1971, Ser. No. 188,945
Int. Cl. G08b *21/00*
U.S. Cl. 340—279 **14 Claims**



A method and apparatus for motor vehicle dimmer alert device utilizing a select switch to initiate operation of the alert and utilizing foot pressure of the driver to prevent the alert from becoming operational but wherein lessening of foot pressure causes operation of the alert to thereby gain the attention of the driver.

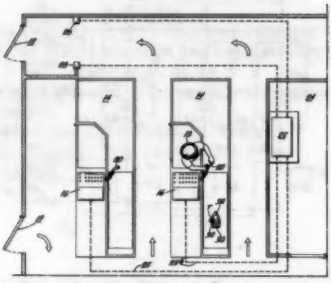
3,718,922
PRODUCT MONITORING APPARATUS, SYSTEM AND METHOD

Allan L. Williams, 2620 Cumberland Ave., Mount Penn, Pa. 19606, and Lyle D. Heck, Reading, Pa.; said Heck assignor to said Williams

Filed Feb. 3, 1971, Ser. No. 112,355
Int. Cl. G08b *13/14*
U.S. Cl. 340—280 **18 Claims**

Thefts of products from a store are prevented and records of sales of the products automatically obtained by means of an electrically releasable locking device which

is secured to each product, which is readily detected by detection apparatus near the exits from the store, which can be released from the product by application thereto of an electrically-powered key, and which may contain data relating to the product which are read out automatically in the form of electrical signals to an appropriate electrical data-processing unit when the key is applied to unlock the locking device. Preferably the unlocking is produced by heating a bimetallic element within the un-



locking device with electrical current applied by way of the key. The data relating to the product are stored in the locking device in coded form along a keyway therein, and as the key is moved along the keyway toward its unlocking position it causes read-out of the data to the data processing unit. The substrate bearing the data has an external portion protruding outside the locking device, on which portion there may be provided visually-observable information about the product.

3,718,923

BIPOLAR FLOATING INPUT, PARTICULARLY FOR DIGITAL PANEL METERS

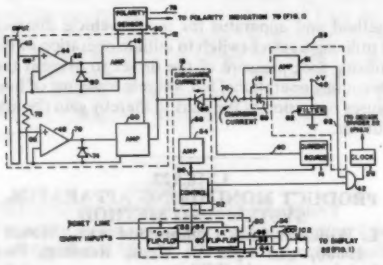
Joshua Horwitz and Bernard M. Gordon, Magnolia, and Brant W. Becker, Sudbury, Mass., assignors to Gordon Engineering Company, Wakefield, Mass.

Original application Aug. 25, 1969, Ser. No. 852,808.

Divided and this application Mar. 17, 1971, Ser. No. 125,078

Int. Cl. G01r *19/14*

U.S. Cl. 340—347 NT **5 Claims**



In a bipolar floating input device, particularly for dual-slope integration digital panel meters, an analog voltage is applied to a bipolar floating input circuit and a digital form of the analog voltage is presented by a display.

3,718,924

ELECTRICAL DEVICE FOR MEASURING AND CONTROLLING THE TEMPERATURE AT A LARGE NUMBER OF POINTS

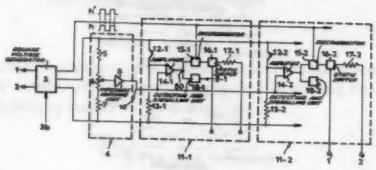
Georges Trubert, Grenoble, and Jean Louis Droulin, Courbevoie, France, assignors to La Telemecanique Electrique, Nanterre, Hauts-de-Seine, France

Filed Oct. 27, 1970, Ser. No. 84,313

Claims priority, application France, Oct. 27, 1969, 6936715

Int. Cl. G08b *21/00*

U.S. Cl. 340—417 **10 Claims**



For the control of temperature on multiple processes, in particular the control of the temperature of threading heads of a textile machine, a device is provided having a multiple Wheatstone bridge in which each control arm comprises a static switching means, the bridge having common set means and being supplied by means of an unidirectional chopped current, means being provided for controlling the conduction angle of the static switching means and, therefore, the rate of heating through a control of the phase difference between the chopped current and the A.C. voltage supply. Alarm means are further provided for signalling the temperature defects, and logic circuits for automatically producing passage from an accelerated to a normal heating, once all the control points have reached a predetermined lower threshold temperature.

3,718,925

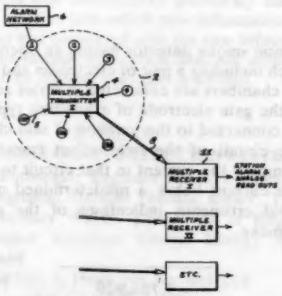
DIGITAL SURVEILLANCE SYSTEM

Edward S. Donn, 1222 Chambers Drive, and Ronald L. Knauber, 1331 N. 31st St., both of Colorado Springs, Colo. 80904

Filed Dec. 28, 1970, Ser. No. 101,505

Int. Cl. G08b *25/00*

U.S. Cl. 340—413 **13 Claims**



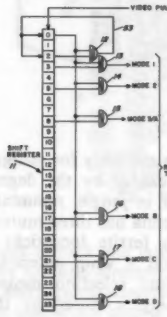
The present invention relates to electronic surveillance systems of the type having a central monitor station connected by a communications link to a plurality of remotely disposed transmitters, each of which receives digital information inputs through a short communications link from a plurality of interrogated points of interest. The system of the present invention includes means for tem-

porarily terminating the scan of remote stations at such time as an alarm signal is detected from any point of interest and to utilize the communications links to convey analog information from the point of interest in alarm to the central monitoring station.

3,718,926
INSTANTANEOUS SIDELOBE INTERROGATION DECODE SUPPRESSOR

Carlyle V. Parker, Alexandria, Va., and Walton B. Bishop, Oxon Hill, Md., assignors to the United States of America as represented by the Secretary of the Navy

Filed July 31, 1970, Ser. No. 59,972
Int. Cl. G01s *9/56*
U.S. Cl. 343—6.8 LC **7 Claims**

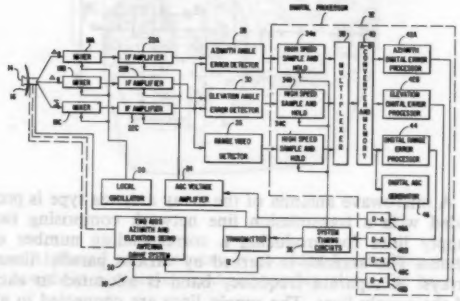


A sidelobe suppression circuit for IFF transponders comprising a shift register or delay line in combination with AND gates for eliminating the current "dead-time" now experienced in IFF transponders receiving a sidelobe suppression signal.

3,718,927
AUTOMATIC DIGITAL ERROR DETECTOR FOR RADAR RANGE TRACKING

Dean D. Howard, and David C. Cross, both of Oxon Hill, Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed April 23, 1971, Ser. No. 136,946
Int. Cl. G01s *9/22*
U.S. Cl. 343—7.4 **4 Claims**

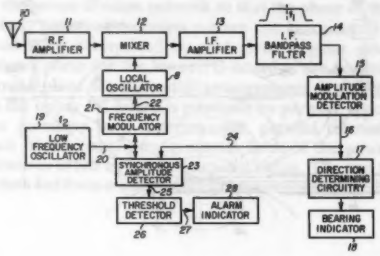


This invention pertains to a new method of obtaining range, AGC and angle tracking error voltages employing digital methods of processing the receiver output of high range resolution monopulse tracking radars to generate these signals.

3,718,928
FALSE VOR BEARING INDICATION MONITOR

Harris A. Stover, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed Aug. 26, 1971, Ser. No. 175,262
Int Cl. G01s *1/44*
U.S. Cl. 343—106 R **7 Claims**

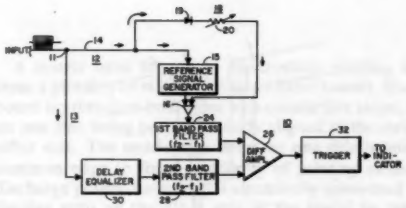


A monitoring means for detecting mistuning of a VOR receiver which, due to FM to AM conversion in the receiver IF bandpass filter, causes false bearing determination. Locally induced frequency modulation of the receiver intermediate frequency produces locally induced amplitude modulation which does not appear on the output of the receiver AM detector if the received signal is within the useful portion of the IF filter passband. Any such locally induced amplitude modulation at the AM detector output is indicative of receiver mistuning and detection of same may operate threshold sensitive alarm means.

3,718,929
PULSE CLASSIFICATION SYSTEM

James H. Van Horn, Pittsford, N.Y., assignor to General Dynamics Corporation

Filed June 8, 1966, Ser. No. 556,093
Int. Cl. G01s *7/28*
U.S. Cl. 343—17.2 R **7 Claims**

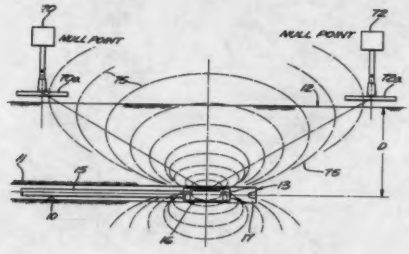


A pulse classification system is described which in one embodiment includes a signal generator which is adapted to produce a reference signal having a predetermined frequency spectrum, with said reference signal being produced in timed relation with a received pulse signal, and means for comparing corresponding predetermined bandwidth portions of the pulse and reference signals to determine whether or not their energy levels correspond.

3,718,930
BORING BIT LOCATOR

Lester E. McCullough, Glendale, and Duane A. Ladine, Northridge, Calif., assignors to The Goldak Company, Inc., Glendale, Calif.

Filed July 6, 1970, Ser. No. 52,474
Int. Cl. G01s 5/02
U.S. Cl. 343—112 R 3 Claims



A bore pipe is rotatably driven to drive a horizontal bore below the earth's surface, and radio energy transmitted from a locator device is monitored on the ground surface by means of a radio receiver tuned to the same frequency. A boring bit locator is rigidly attached between the bore pipe and a boring bit, and carries a small battery powered transmitter. A single operator working on the surface of the ground with a single radio receiver is able to monitor the progress and location of the boring bit.

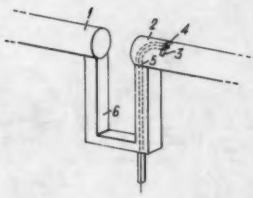
The boring bit locator has a water passageway which permits a stream of water delivered through the bore pipe to flow to the boring bit for the purpose of washing cuttings back through the hole.

The method of determining the position of the locator device takes advantage of the radiation pattern of the transmitter, which is so arranged as to be susceptible to being precisely measured.

3,718,931
AERIAL FIELD MONITORING

Robin Ashley Collins, Welwyn Garden City, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed July 21, 1971, Ser. No. 164,759
Int. Cl. G01r 1/24
U.S. Cl. 343—703 3 Claims

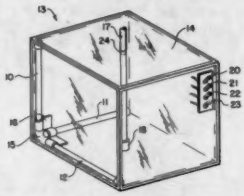


The radiated field of a dipole at any point is directly related in amplitude and phase to the current in the dipole arms. This can be sampled by a slot cut in the dipole arm. The voltage across this slot is fed to a transmission line which may be matched to subsequent processing units by a suitable positioning of a resistor. This enables both the R.F. current from the power fed to the dipole, and the current produced by interaction with other radiating elements to be measured.

3,718,932
COMBINED MULTI-POLARIZATION LOOPSTICK AND WHIP ANTENNA

Kurt Ikrath, Elberon, and Morris Acker, Wanamassa, N.J., assignors to the United States of America as represented by the Secretary of the Army

Filed June 1, 1971, Ser. No. 148,755
Int. Cl. H01q 7/08
U.S. Cl. 343—728 5 Claims

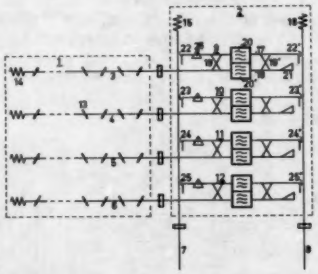


A receiving antenna assembly for mitigating signal fading and cancellation caused by the degrading effects of multipaths and scatter in jungle, mountain or urban environments which antenna has three mutually-perpendicular, multi-polarization ferrite loopsticks for sensing H field signal energy and a whip antenna for sensing E field signal energy, and selection means for choosing among the signal energies sensed by the ferrite loopsticks and the whip antenna.

3,718,933
MICROWAVE ANTENNA

Hendrik Teunis Huele, Hengelo, Netherlands, assignor to N.V. Hollandse Signaalapparaten, Hengelo, Netherlands

Filed Aug. 11, 1971, Ser. No. 170,711
Int. Cl. H01q 13/10
U.S. Cl. 343—768 3 Claims



A microwave antenna of the array antenna type is provided with a transmission line network comprising two supply lines for producing a corresponding number of beams. The antenna is formed by various parallel linear arrays. A separate frequency band is allocated to each of the supply lines. The supply lines are connected to all linear arrays by means of frequency-selective couplers (e.g. diplexers), each so designed that they feed the combined signals of various frequency bands to be transmitted to the associated linear arrays, while they feed the received signals separated according to frequency band to the various supply lines.

3,718,934

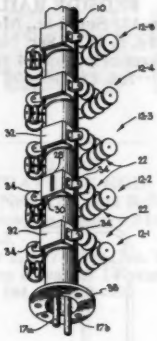
BROADCAST ANTENNA ASSEMBLY

Richard D. Bogner, Roslyn, N.Y., assignor to Ampex Corporation

Continuation-in-part of Ser. No. 661,625, Aug. 18, 1967, Pat. No. 3,587,108. This application Feb. 24, 1971, Ser. No. 118,436

Int. Cl. H01q *13/10, 19/10, 15/14*

U.S. Cl. 343—770 13 Claims



A pair of back-to-back and interlaced antenna arrays, including end-fire parasitic directors, are supported by a common structure and perform almost independently with very little coupling or interaction despite their proximity. Each antenna array may provide an omnidirectional radiation pattern.

3,718,935

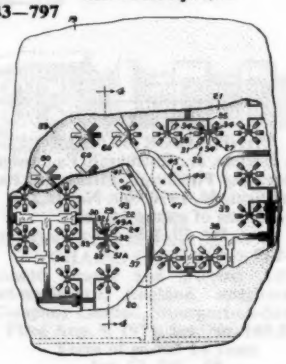
DUAL CIRCULARLY POLARIZED PHASED ARRAY ANTENNA

Joseph C. Ranghelli, Belleville, and Emmanuel Perrotti, Ramsey, both of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Feb. 3, 1971, Ser. No. 112,192

Int. Cl. H01q *21/26*

U.S. Cl. 343—797 15 Claims



A phased array antenna is provided by stacking two PC boards in a superimposed relationship above the base of a housing for the antenna. Each of these PC boards contain therein a symmetrical arrangement of photo etched or printed mat-strip power division networks and a plurality of radial arrangements each including a plurality of photo etched or printed mat-strip dipole elements having a given angular relationship therebetween. The dipole elements of the radial arrangements on one PC board are orthogonally related to the dipole elements of the radial arrangements on the other PC board. RF switching means control the orthogonally related dipole elements of each of the PC boards that are connected to the power division network so that the phase of the dual circularly polarized radiation pattern can be controlled in quantized steps determined by said given angular relation. The ground plane for the lower PC board is the housing and the ground plane for the radial arrangements of dipole elements on the upper PC board is provided by parallel, space conductive members in a superimposed, parallel relationship with each of the radial arrangements. Each of the power division networks is fed by a double ended balun. The two baluns are in turn fed from a quadrature hybrid.

3,718,936

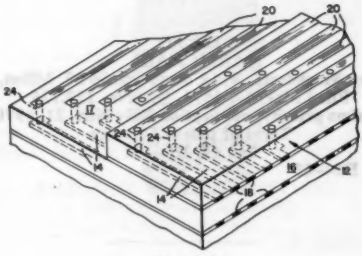
ELECTROSTATIC MATRIX HEAD CONSTRUCTION

Philip J. Rice, Jr., Atherton, Calif., assignor to American Express Investment Management Company, San Francisco, Calif.

Filed June 16, 1971, Ser. No. 109,072

Int. Cl. G01d *15/08*

U.S. Cl. 346—74 ES 9 Claims



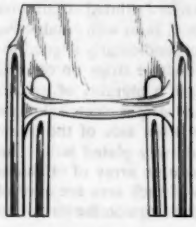
A matrix head for use in electrostatic printing is formed from a plurality of stacked printed circuit boards. Each circuit board is printed on both sides with conductive strips, the strips on one side being perpendicularly aligned to the strips on the other side. The conductive strips on one side terminate at a common edge to form a plurality of printing elements, i.e., discharge points. Each strip is electrically connected to a conductive strip on the other side of the board by means of a front-to-back conductively plated hole. The stacked boards provide along one side an array of character printing areas, the discharge points of each area are controlled by electrical leads to the conductive strips on the circuit board.

DESIGNS

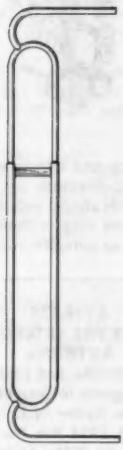
FEBRUARY 27, 1973

226,362
COSMETIC CONTAINER
David Seidler, Forest Hills, N.Y.
(527 Lexington Ave., New York, N.Y. 10017)
Filed Apr. 15, 1971, Ser. No. 134,541
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—20

226,363
ARMCHAIR
Lodovico Magistretti, Via Conservatorio 20, Milan, Italy
Filed Mar. 10, 1971, Ser. No. 123,125
Claims priority, application Italy Nov. 21, 1970
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—65

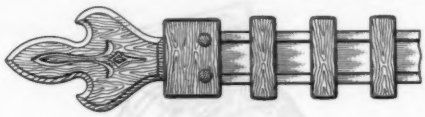


226,364
BEDSIDE RAIL
Morton I. Thomas, 125 South St., Monroe, N.Y. 10027
Filed Aug. 5, 1971, Ser. No. 169,594
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—198

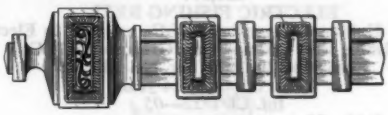


226,365
PANIC DOOR HANDLE
William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.
Filed Sept. 30, 1970, Ser. No. 25,284
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—149

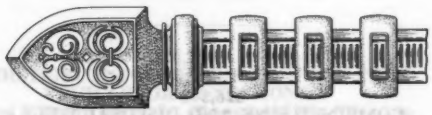
226,366
TRAVERSE ROD
Robert Fisher, Whitestone, N.Y., and Willfred Goldschmidt, Cos Cob, Conn., assignors to Kenney Manufacturing Company, Warwick, R.I.
Filed July 2, 1971, Ser. No. 159,578
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—210



226,367
TRAVERSE ROD
Ronald Emmerling, New City, and Robert Fisher, Whitestone, N.Y., assignors to Kenney Manufacturing Company, Warwick, R.I.
Filed July 2, 1971, Ser. No. 159,577
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—210



226,368
TRAVERSE ROD
Ronald Emmerling, New City, and Robert Fisher, Whitestone, N.Y., assignors to Kenney Manufacturing Company, Warwick, R.I.
Filed July 2, 1971, Ser. No. 159,579
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—210



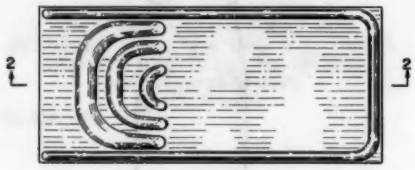
226,369
SWIVEL CONNECTOR FOR JOINING ENDS OF CHAINS OR THE LIKE
Walter Ronald Draper and Thomas Alfred Poulton, Stourport-on-Severn, England, assignors to Parson Chain Company Limited, Stourport-on-Severn, England
Filed Aug. 5, 1971, Ser. No. 169,589
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—252

226,370
BOTTLE OR SIMILAR ARTICLE
Michael D. Cromb, Shrewsbury, N.J., assignor to Midland Glass Company, Inc., Cliffwood, N.J.
Filed May 10, 1971, Ser. No. 142,085
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—1

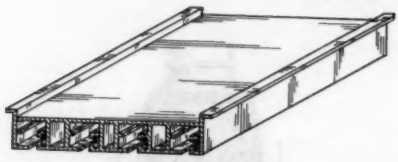
226,371
BOTTLE
Howard Cooper, 175 E. Delaware, Suite 7707, Chicago, Ill. 60611
Filed Nov. 18, 1971, Ser. No. 200,280
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—28

226,372
BOTTLE
Jorgen Lauridsen, Roskilde, Denmark, assignor to Colgate-Palmolive Company, New York, N.Y.
Filed June 10, 1971, Ser. No. 152,019
Claims priority, application Denmark Jan. 13, 1971
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—89

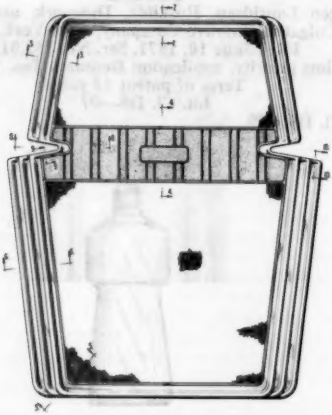
226,373
COMBINED DISPLAY AND PACKAGING TRAY FOR MEAT OR THE LIKE
Paul Joonase, Taylors, and Richard R. Perdue, Greer, S.C., assignors to W. R. Grace & Co., Duncan, S.C.
Filed May 22, 1972, Ser. No. 255,934
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—242



226,374
EXTRUDED PLASTIC HEADER TRACK FOR A WINDOW UNIT
Dominique Dallaire, 635a Commerciale St., and Raymond M. Dallaire, 587 de la Falaise St., both of St. David, Quebec, Canada
Filed Jan. 13, 1971, Ser. No. 106,298
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6

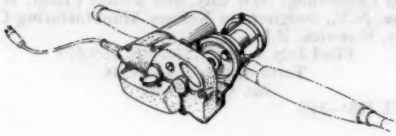


226,375
AUTOMOBILE FLOOR MAT
Charles A. Wells and Raymond A. Krusinski, Coshocton, Ohio, assignors to Pretty Products, Inc., Coshocton, Ohio
Filed July 2, 1971, Ser. No. 159,576
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D14—5

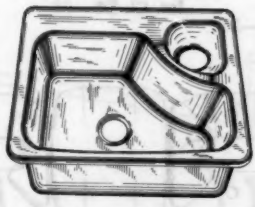


226,376
WHEEL
John A. Main, East Lansing, and Millard Fillmore Harty, Jr., Bloomfield Hills, Mich., assignors to Motor Wheel Corporation, Lansing, Mich.
Original design application Apr. 23, 1970, Ser. No. 22,592, now Patent No. 221,934. Divided and this application June 21, 1971, Ser. No. 155,398
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—30 R

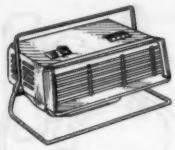
226,377
ELECTRIC FISHING REEL
Peck T. Huffman, Greensboro, N.C., assignor to Electric Fishing Reel Systems, Inc., Greensboro, N.C.
Filed Sept. 20, 1971, Ser. No. 182,305
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



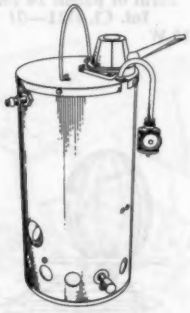
226,378
COMBINED SINK AND DISPOSAL WELL
Donald W. Doman, Janesville, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Dec. 16, 1971, Ser. No. 209,016
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—62



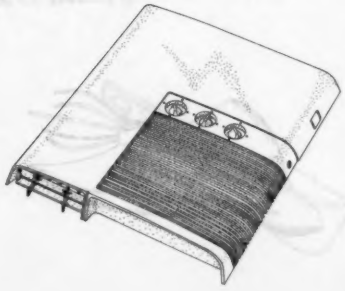
226,379
FAN HEATER
Petrus Joannes Stut, Eelde, Netherlands, assignor to U.S. Philips Corporation
Filed Sept. 23, 1970, Ser. No. 25,153
Claims priority, application Switzerland Mar. 23, 1970
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—73



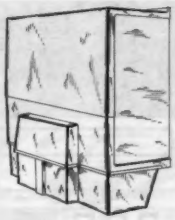
226,380
PORTABLE WATER HEATER
James E. Watts, Bountiful, Utah, assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed Aug. 2, 1971, Ser. No. 168,522
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—88



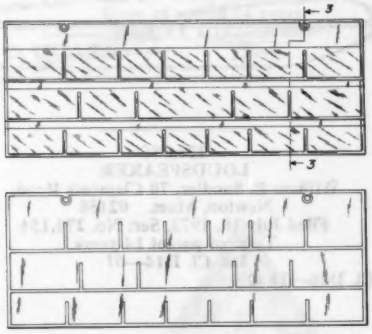
226,381
AIR DISTRIBUTION UNIT FOR ROOF-MOUNTED VEHICLE AIR CONDITIONER
Millard Fillmore Harty, Jr., Bloomfield Hills, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.
Filed Aug. 25, 1971, Ser. No. 175,015
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—142



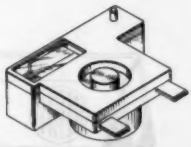
226,382
CASING FOR A HUMIDIFIER
Dana W. Mox, Glenview, Ill., assignor to Research Products Corporation, Madison, Wis.
Filed Aug. 12, 1971, Ser. No. 171,419
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—147



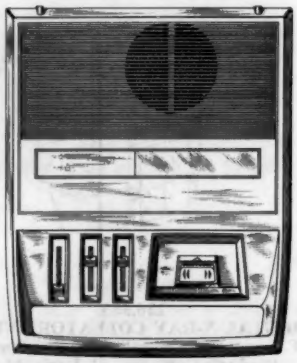
226,383
DENTAL X-RAY COLLATOR/INDEX
Anne E. Loughran, Centralia, Ill., assignor to Thann Products Company, St. Louis, Mo.
Filed Jan. 28, 1972, Ser. No. 221,853
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 R



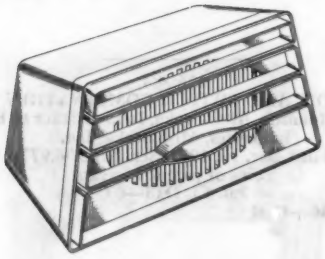
226,384
COIL AND SWITCH COMBINATION
Dean W. Johnson, Mishawaka, Ind., assignor to Burcliff Industries, Mishawaka, Ind.
Filed Dec. 10, 1971, Ser. No. 206,977
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R



226,385
CASSETTE TAPE RECORDER
John S. Maliskas, North Syracuse, N.Y., assignor to General Electric Company
Original design application June 5, 1970, Ser. No. 23,335, now Patent No. 222,360. Divided and this application July 28, 1971, Ser. No. 176,422
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B

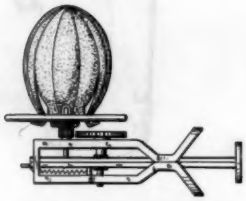


226,386
LOUDSPEAKER
William B. Sandler, 70 Clements Road, Newton, Mass. 02158
Filed July 10, 1972, Ser. No. 270,154
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G



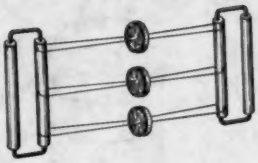
226,387
FIGURINE
Mary B. Johns, 413 South St., Cambridge, Ohio 43725
Continuation of abandoned design application Ser. No. 10,058, Feb. 9, 1970. This application Feb. 25, 1971, Ser. No. 119,072
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 E

226,388
TOY SPINNER WITH OPENABLE PETALS
Perry Feuer, Roslyn, N.Y., assignor to Creative Creations, Inc., New York, N.Y.
Filed Feb. 25, 1971, Ser. No. 119,076
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 W

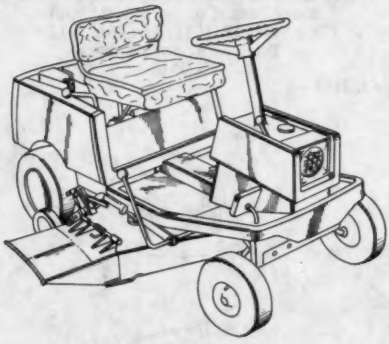


226,389
INFLATABLE MISSILE KITE
Calogero Madonia, 6250 E. 36th St., Tulsa, Okla. 74135
Filed Oct. 28, 1971, Ser. No. 193,615
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AF

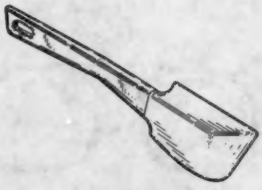
226,390
COMBINED EXERCISER AND WHIRLING TOY
William Margolin and Mildred Margolin, both of 829 Coffman Drive, Montebello, Calif. 90640
Filed Nov. 29, 1971, Ser. No. 203,125
Term of patent 14 years
Int. Cl. D21—*01, 02*
U.S. Cl. D34—15 BB



226,391
RIDING MOWER
Viktor Schreckengost, Cleveland Heights, Ohio, assignor to The Murray Ohio Manufacturing Co., Nashville, Tenn.
Filed June 19, 1972, Ser. No. 264,009
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 D

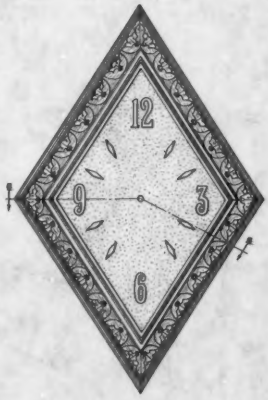


226,392
SCRAPER
Per Lindbo, Oslo, Norway, assignor to A/S W. Jordan Borste & Penselfabrik, Oslo, Norway
Filed June 24, 1971, Ser. No. 156,602
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D44—1 R

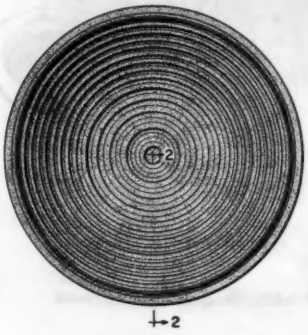


226,393
SERVING TRAY
Benjamin Greenstein, Forest Hills, N.Y., assignor to Daher Company, Inc., Long Island City, N.Y.
Filed Mar. 12, 1971, Ser. No. 123,926
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—10 E

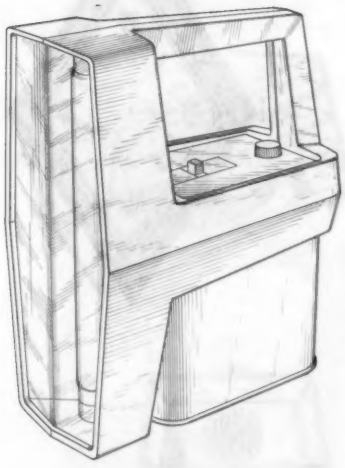
226,394
CLOCK CASING
Richard K. Thomas, Elk Grove Village, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Sept. 27, 1971, Ser. No. 184,332
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 R



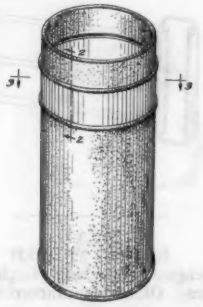
226,395
FRESNEL LENS
William H. Dorman, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed May 24, 1971, Ser. No. 146,582
Term of patent 14 years
Int. Cl. D26—*05, 06*
U.S. Cl. D48—16 A



226,396
PORTABLE FLUORESCENT LIGHT
Donald Wayne Doman, Janesville, Wis., assignor to Gould Inc., Mendota Heights, Minn.
Filed June 24, 1971, Ser. No. 156,587
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R



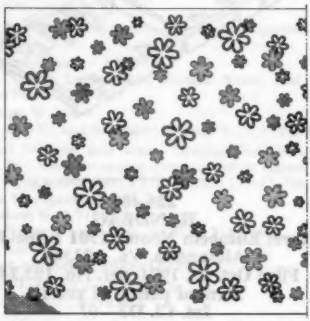
226,397
SAND URN OR SIMILAR ARTICLE
Leon H. Franklin, 217–21 N. Jefferson St., Chicago, Ill. 60606
Filed June 9, 1970, Ser. No. 23,407
Term of patent 7 years
Int. Cl. D7—*99*
U.S. Cl. D49—35



226,398
HOPPER TYPE SCREEN UNIT FOR CLASSIFYING AND SEPARATING LIQUIDS AND SOLIDS
Marvin E. Ginaven, Springfield, Ohio, assignor to The Bauer Bros. Co., Springfield, Ohio
Filed Sept. 15, 1971, Ser. No. 180,935
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 R

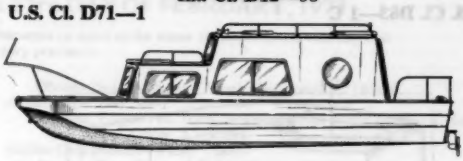
226,399
SPECTACLE FRAME OR SIMILAR ARTICLE
Jack G. Mark, Bayside, N.Y., assignor to Whitney Optical Co., Inc., Woodside, N.Y.
Filed Nov. 19, 1971, Ser. No. 190,472
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

226,400
PAPER TOWELING
Nancy L. Joski, Green Bay, Wis., assignor to Fort Howard Paper Company
Continuation-in-part of design application Ser. No. 25,890, Nov. 9, 1970. This application July 15, 1971, Ser. No. 165,861
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D59—2 A

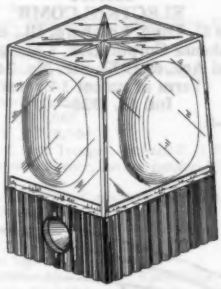


226,401
MICROFICHE VIEWER
Donald Stanley, Poway, and Maurice H. Artaud, Spring Valley, Calif., assignors to Stromberg DatagraphiX, Inc., San Diego, Calif.
Filed Mar. 10, 1971, Ser. No. 123,115
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 N

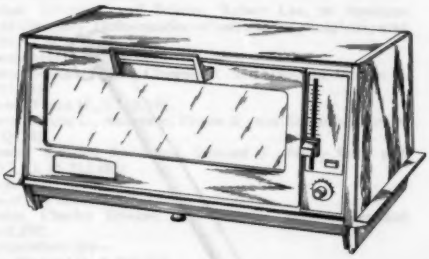
226,402
BOAT
Kenneth W. Krutz, 498 Uppermill Heights, Salina, Kans. 67401
Filed Mar. 15, 1971, Ser. No. 124,624
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1



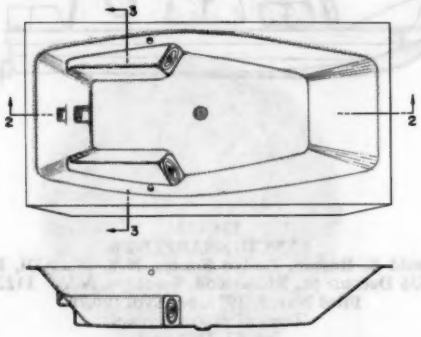
226,403
PENCIL SHARPENER
Ronald B. Rosson, Roslyn Estates, N.Y. (% ADI, Inc., 1535 Decatur St., Ridgewood, Brooklyn, N.Y. 11221)
Filed Nov. 5, 1971, Ser. No. 196,262
Term of patent 7 years
Int. Cl. D19—*99*
U.S. Cl. D74—21 B



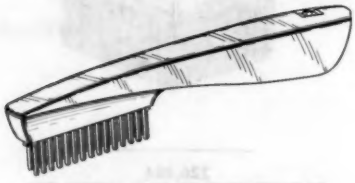
226,404
ELECTRIC OVEN TOASTER OR SIMILAR ARTICLE
Max C. Hauenstein, Monroe, Conn., assignor to General Electric Company
Filed Nov. 18, 1971, Ser. No. 200,277
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—10 N



226,405
HYDROMASSAGE BATHTUB
Roy A. Jacuzzi, Moraga, and Peter L. Kosta, Lafayette, Calif., assignors to Jacuzzi Research, Inc.
Filed Jan. 26, 1972, Ser. No. 221,129
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D83—1 C

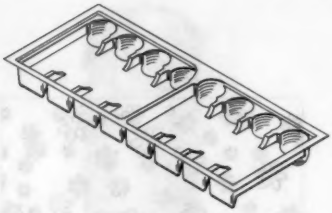


226,406
ELECTRIC COMB
Douglas G. Long, Lombard, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Apr. 6, 1972, Ser. No. 241,862
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8



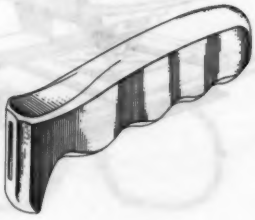
226,407
EXTENSIBLE ROD CASE
Donald W. Doman, Janesville, Wis., assignor to Flambeau Plastics Corporation
Filed July 30, 1970, Ser. No. 24,231
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R

226,408
STORAGE TRAY FOR MICROSCOPE SLIDES
William Earl Jones, Naperville, Ill., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Filed June 3, 1971, Ser. No. 149,872
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1



226,409
HANDBAG
Margaret Elizabeth Noone, 1901 Belfield Road, Alexandria, Va. 22307
Filed Oct. 27, 1971, Ser. No. 193,242
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 F

226,410
KNIFE HANDLE
Walter A. Kunze, Chillicothe, Ohio, assignor to Lincoln Manufacturing Company, Inc.
Filed July 29, 1971, Ser. No. 167,551
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D95—3 R



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF FEBRUARY, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abarotin, Eugene V.; Bollinger, Edward R., Jr.; and Nicely, Thomas E., to United States Steel Corporation. Apparatus for adjustment of side trimmer knife. 3,718,064, Cl. 83-502.000.

Abbott, Charles P., III; and Reilly, John M., to Texas Instruments, Incorporated. Liquid crystal display mounting structure. 3,718,842, Cl. 317-101.0cc.

Abbott, Frank R. High fidelity underwater music projector. 3,718,897, Cl. 340-8.00r.

Abbott Laboratories: *See—*
Garmaise, David Lyon; Paris, Gerard Yvon; and Plotnikoff, Nicholas Peter, 3,718,657.

Abraham, William W.: *See—*
Lanahan, John H.; and Abraham, William W., 3,718,255.

Abramson, Carl Newton; and Jones, Douglas George, to Adaptive Technology, Inc. Voice or analog communication system employing adaptive encoding techniques. 3,718,768, Cl. 179-15.0ba.

ACF Industries, Incorporated: *See—*
Evans, William R., 3,718,803.
Thornton, Duane V.; and Holt, Jan D., 3,718,099.

Acker, Morris: *See—*
Ikrath, Kurt; and Acker, Morris, 3,718,932.

Acme Highway Products Corporation: *See—*
Kerschner, James J., 3,718,403.

Acme-Cleveland Corporation: *See—*
Schubert, Karl P.; and Rienerth, George R., 3,718,211.

Acra-Plant, Inc.: *See—*
Williams, Donald E., 3,718,191.

Adamo, Michael D., to Monsanto Company. Apparatus for removing a hollow article having internal enlargements from an injection mold assembly. 3,718,419, Cl. 425-438.000.

Adams, James E.: *See—*
Wysocki, Joseph J.; Adams, James E.; Becker, James H.; Madrid, Robert W.; and Haas, Werner E., 3,718,380.
Wysocki, Joseph J.; Adams, James E.; Becker, James H.; Madrid, Robert W.; and Haas, Werner E. L., 3,718,382.

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Adaptive Technology, Inc.: *See—*
Abramson, Carl Newton; and Jones, Douglas George, 3,718,768.

Addor, Roger Williams; and Drabb, Thomas Walter, Jr., to American Cyanamid Company. Aralkylthiovinyl phosphorothioates. 3,718,718, Cl. 260-948.000.

Adler, Franklin P.; Bailey, John D.; and Bridges, George F., to Pullman Incorporated. Railroad box car and door positioning and stop means therefor. 3,718,100, Cl. 105-378.000.

Adolphi, Heinrich: *See—*
Dietsche, Wolfram; Adolphi, Heinrich; Beutel, Peter; and Koenig, Karl-Heinz, 3,718,661.

Afanasiev, Vadim Nikolaevich; Belyaev, Jury Pavlovich; Gaiduchik, Vladimir Olegovich; Gruzin, Pavel Lukich; Konkin, Nikolai Alexandrovich; Megarsky, Valery Vasilievich; Okunev, Boris Nikolaevich; and Trokin, Jury Alexandrovich. Device for determining the lvel and surface profile of materials utilizing hard radiation. 3,718,817, Cl. 250-43.5fl.

Agfa-Gevaert Aktiengesellschaft: *See—*
Berthold, Werner; Von Konig, Anita; and Timmler, Helmut, 3,718,468.
Haase, Gunter; and Schopper, Erwin, 3,718,606.
Kolb, Gunter; Schmidt, Adolf; Schmitz-Josten, Robert; and Wolff, Erich, 3,718,474.
Pfeifer, Josef; Ambraschka, Kasimir; Koopmann, Adolf; Hofmann, Wilfried; Dietrich, Karl-Heinz; and Rauffer, Walter, 3,718,391.

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Ahlen, Karl Gustav, to S.R.M. Hydromekanik AB. Hydrodynamic torque converters. 3,717,996, Cl. 60-327.000.

Ahrens, Kurt-Henning: *See—*
Bohme, Horst; and Ahrens, Kurt-Henning, 3,718,659.

Ahrweiler, Karl-Heinz, to Kuesters, Eduard, Maschinenfabrik. Method and apparatus for treating a moving web of material. 3,718,427, Cl. 8-151.000.

Aichenegg, Paul C.: *See—*
Emerson, Carl D.; and Aichenegg, Paul C., 3,718,687.

Airco, Inc.: *See—*
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Akashi, Naotomo: *See—*
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Aktiebolaget Leo: *See—*
Eriksoo, Edgar; Fex, Hans; Hogberg, Knut Bertil; Mollberg, Rene; and Rohte, Oskar, 3,718,694.

Aktien-Gesellschaft "Weser": *See—*
Janssen, Hans Georg, 3,718,108.

Aktiengesellschaft Brown, Boveri & Cie: *See—*
Fischer, Wilfried; and Rohr, Franz-Josef, 3,718,506.
von Arx, Arnold; and Kuphal, Klaus, 3,718,818.

Akzona Incorporated: *See—*
Fries, Karl, 3,717,910.

Alaimo, Benjamin, to Peripheral Equipment Corporation. Reel servo system. 3,718,289, Cl. 242-190.000.

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Albrecht, Konrad, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Stabilized pesticidal wettable powder formulations. 3,718,454, Cl. 71-106.000.

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Cooke, William Ernest; Cote, Jacques Francois; Innes, Robert Arthur; Spooner, Roy Cowieson; and Kellermann, Walter Maria Eduard, 3,718,547.

Alexandrov, Nikolai Nikolaevich; and Strukov, Arkady Dmitrievich, to Nauchno-Issledovatelsky Institut Onkologii i Meditsinskoi Radiologii MZ BSSR. Radioactive solutions injector for lymphatic systems. 3,718,138, Cl. 128-214.00r.

Alfter, Franz-Werner: *See—*
Wienand, Michael; Jensen, Klaus; Primessing, Franz; and Alfter, Franz-Werner, 3,717,916.

Alicot, Marie-Josephe Jeanne: *See—*
Sureau, Robert Frederick Michel; and Alicot, Marie-Josephe Jeanne, 3,718,652.

Allied Chemical Corporation: *See—*
Gerson, Herman, 3,718,669.
Stewart, Donald F., 3,718,164.
Watson, William E.; and Troeger, Richard P., 3,718,736.

Alms, Erhard E. Combined burner, fan and igniter. 3,718,321, Cl. 263-19.00a.

Altenburger, Otto, to Stromberg-Carlson Corporation. Scanner circuit. 3,718,907, Cl. 340-147.00r.

Aluminium Suisse SA: *See—*
Laroche, Rene V., 3,718,147.

Ambraschka, Kasimir: *See—*
Pfeifer, Josef; Ambraschka, Kasimir; Koopmann, Adolf; Hofmann, Wilfried; Dietrich, Karl-Heinz; and Rauffer, Walter, 3,718,391.

American Chain & Cable Company, Inc.: *See—*
Gilmore, William J.; and Mesler, Lilburn L., 3,717,987.

American Cyanamid Company: *See—*
Addor, Roger Williams; and Drabb, Thomas Walter, Jr., 3,718,718.
Amin, Ashok Babubhai; and Bristow, Robert Lee, 3,718,729.
Cook, Charles Calvin; and Haynsworth, Erwin Mathew, 3,718,003.
Rauhut, Michael McKay, 3,718,599.
Smyth, Nelda Marjorie, 3,718,614.
Stackel, Richard Frederick; and Depaolo, George Robert, 3,718,501.

American Express Investment Management Company: *See—*
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American Home Products Corporation: *See—*
Strike, Donald P.; and Smith, Herchel, 3,718,667.

American Velcro, Inc.: *See—*
Perina, Joseph, 3,717,908.
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Amin, Ashok Babubhai; and Bristow, Robert Lee, to American Cyanamid Company. Defluorination of wet process phosphoric acid. 3,718,729, Cl. 423-321.000.

Amoco Production Company: *See—*
Bearden, William G.; Fast, Clarence R.; and Mallinger, Morton A., 3,718,088.
Clements, Frank H., 3,718,195.
Lummus, James L.; Anderson, Duane B.; and Edwards, Carl D., 3,718,585.

Amos, Homer C.; and Strickland, Edward T. Tacky floor pad. 3,717,897, Cl. 15-215.000.

AMP Incorporated: *See—*
Apa, Armand Samuel, 3,717,930.
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Anaconda Wire and Cable Company: *See—*

Chrisman, Willis L.; and Ring, Walter R., Sr., 3,718,023.
Ancherlik, Arnost. Dosing apparatus. 3,718,438, Cl. 23-259.000.
Anderson, Duane B.: *See—*
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Anderson, Forrest Symington, to Anderson Mavor Limited. Cutting drums for mineral mining machines. 3,718,369, Cl. 299-59.000.
Anderson, Layton H. Bunk feeder for cattle. 3,718,121, Cl. 119-52.00b.
Anderson Mavor Limited: *See—*
Anderson, Forrest Symington, 3,718,369.
Anderson, Peter Harold, to Bell Telephone Laboratories, Incorporated. Pulse train checking circuit. 3,718,778, Cl. 179-175.20a.
Ando, Masao, to Chisso Corporation. Fixing heat-generating pipe utilizing skin effect current. 3,718,804, Cl. 219-301.000.
Ando, Noriyoshi: *See—*
Oishi, Kazuo; Kurebayashi, Tokuhiro; Ando, Noriyoshi; Yamamoto, Noboru; Toda, Tadahide; Nohira, Hidetaka; and Katoh, Takashi, 3,718,126.
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Anikin, Leonid Trifonovich; Kravetsky, Gennady Alexandrovich; Dergunova, Viktoria Sergeevna; and Dutov, Valery Vasilievich. Method of joining graphite articles. 3,717,926, Cl. 29-472.700.
Annis, James R., Jr., to Signode Corporation. Apparatus for friction fusing. 3,718,526, Cl. 156-580.000.
Antkowiak, Thomas A., to Firestone Tire & Rubber Company, The. Process for producing dilithio hydrocarbons. 3,718,702, Cl. 260-665.00r.
Apa, Armand Samuel, to AMP Incorporated. Method of connecting a center contact within a coax connector. 3,717,930, Cl. 29-629.000.
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Araki, Tadashi; Asano, Kiro; Takita, Hitoshi; and Awao, Takao. Method for heavying polycyclic substances. 3,718,574, Cl. 208-44.000.
Arber, Scott Gordin: *See—*
Morgan, Cyril Alfred; Arber, Scott Gordin; and Young, Oswald William John, 3,718,490.
Argus Engineering Company, Inc.: *See—*
Costello, Bernard J., 3,718,800.
Aritz, Yokohama: *See—*
Niikura, Isamu; and Aritz, Yokohama, 3,718,823.
Arlow, Michael S., to United States of America, Army, mesne. Electric circuit test element for use with a pair of electrical connectors. 3,718,859, Cl. 324-72.500.
Armstrong, Ramsey C.; and Hoover, Herbert, III, to Sierracin Corporation, The. Preformed self-supporting, flexible and coherent electrically heatable laminar structure and method of manufacture thereof. 3,718,535, Cl. 161-165.000.
Armstrong-Blum Manufacturing Company: *See—*
Wilkin, John P., 3,718,061.
Arnold, Wolfgang. Method and apparatus for producing a hollow body from a helically wound strand. 3,718,522, Cl. 156-448.000.
ARO Corporation, The: *See—*
Brandenberg, Karl; and Kautz, Wilbert C., 3,718,409.
Aronoff, Edward I. Apparatus for rolling tubular fabrics. 3,718,300, Cl. 242-66.000.
Asahi Glass Company Ltd.: *See—*
Tabata, Yoneho; and Kojima, Gen, 3,718,558.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Sugiyama, Michiyuki; Takatori, Yoshikuni; Touyama, Ryosuke; Nakamura, Akira; Yamauchi, Teiji; Kato, Masaaki; and Nakashiba, Yoshio, 3,718,560.
Asano, Kiro: *See—*
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Ashland Oil Inc.: *See—*
Chapman, Duane K.; Newman, John W.; and Green, William S., 3,718,704.
Assouline, Georges J.; Hareng, Michel; and Leiba, Eugene, to Thomson-CSF. Liquid crystal electro-optical modulators. 3,718,381, Cl. 350-160.0lc.
Atkinson, Cliff C.; Butler, Rolland O.; and Ross, Francis J., to Du Pont de Nemours, E. I., and Company. Method of making alkali metal-filled electrical conductors and terminations therefor. 3,717,929, Cl. 29-624.000.
Atlantic Richfield Company: *See—*
Uhl, George A.; and Baillie, Lloyd A., 3,718,579.
Atlas Copco Aktiebolag: *See—*
Berger, Karl Gustav; and Fernstrom, Gustaf Harry, 3,718,410.
Aubert, Jean. Movable dam and method of operation. 3,718,002, Cl. 61-22.000.
Auping N.V.: *See—*
Savenije, Franciscus Gerhardus, 3,717,902.
Awao, Takao: *See—*
Araki, Tadashi; Asano, Kiro; Takita, Hitoshi; and Awao, Takao, 3,718,574.
Awataguchi, Shigemi: *See—*
Okuda, Tomoharu; and Awataguchi, Shigemi, 3,718,742.
Ayers, Orval E.; and Huskins, Chester W., to United States of America, Army. Method for operating hybrid engines. 3,717,997, Cl. 60-220.000.
Ayers, Thaddeus. Sanitary collector. 3,718,358, Cl. 294-19.00r.
Babb, John J.; and Bays, Marvin G., to Delta Exploration Company, Inc. Amphibious seismic exploration vehicle and method. 3,718,206, Cl. 181-.5vm.
Babb, John J., to Delta Exploration Company, Inc. Method and apparatus for providing underwater seismic energy signals. 3,718,207, Cl. 181-.50h.
Bach, Niels Breinholt, to Mirroless Watson Company Limited. Process and apparatus for the clarification of liquids. 3,718,257, Cl. 210-73.000.
Bacon, James A.; and Lindenmuth, Charles J., to United States Steel Corporation. Pail bail ear tester. 3,718,039, Cl. 73-141.0ab.
Bacon, James R.; Barnes, George H.; and Schott, John C., to Burroughs Corporation. Line generator for CRT display systems. 3,718,834, Cl. 315-22.000.
Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Sabater, Eudaldo; and Schlemmer, Lothar, 3,718,727.
Baer, Maurice; and Severini, Joseph H., to United States of America, Army. Mine sterilization by means of a deliquescent additive. 3,718,513, Cl. 149-24.000.
Baersch, Herbert: *See—*
Prell, Gunter; and Baersch, Herbert, 3,718,385.
Bagguley, Richard B., to Continental Can Company, Inc. Rack for pressurized product dispensing container. 3,718,234, Cl. 222-135.000.
Bailey, Henry Philip, to International Research & Development Company Limited. Electrolytic cells. 3,718,540, Cl. 204-272.000.
Bailey, Homer M.: *See—*
Martone, Ronald J.; Mueller, Peter G.; and Bailey, Homer M., 3,718,833.
Bailey, John D.: *See—*
Adler, Franklin P.; Bailey, John D.; and Bridges, George F., 3,718,100.
Bailey, Ronald B., to General Electric Company. Phase angle regulator for high frequency inverter. 3,718,852, Cl. 321-19.000.
Baillie, Lloyd A.: *See—*
Uhl, George A.; and Baillie, Lloyd A., 3,718,579.
Bain, George W.; and Haak, Fred C., to International Telephone and Telegraph Corporation. Multipactor ion generator. 3,718,836, Cl. 315-111.000.
Baird, Robert J.; and Everett, Thomas G., Jr., to Union Carbide Corporation. Reusable mandrel for structures having zero draft or re-entrant geometries. 3,717,914, Cl. 29-195.000.
Bakassian, Georges; and Bazouin, Andre, to Rhone-Poulenc S.A. Process for obtaining hydrogenochlorosilanes. 3,718,682, Cl. 260-448.20p.
Baker, Broughton L.: *See—*
Wu, James S. H.; and Baker, Broughton L., 3,718,583.
Baker, Don R.; Tilles, Harry; and Dewald, Chester L., to Stauffer Chemical Company. Method of combatting weeds with α-naphthoxy acetamides. 3,718,455, Cl. 71-118.000.
Bakkerus, Hermanus, to Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid, Handel en Verkeer. Pipe fitting. 3,718,351, Cl. 285-236.000.
Baldwin, D. H., Company: *See—*
Bunger, David A., 3,718,748.
Martin, Daniel W.; and Stein, John L., 3,718,747.
Baldwin, Mart G.; and Reed, Samuel F., Jr., to United States of America, Army. Hydroxy-terminated copolymers of butadiene and ferrocene derivatives. 3,718,633, Cl. 260-82.100.
Bancal, Bernard Robert Laurent Marie: *See—*
Violleau, Andre; Coffy, Rene Louis; and Bancal, Bernard Robert Laurent Marie, 3,718,521.
Bang, Erik Borje. Production of long chips and products made from same. 3,718,285, Cl. 241-28.000.
Bank, Gilbert, to National Midco Industries, Incorporated. Automatic telephone calling apparatus utilizing digital logic device. 3,718,771, Cl. 179-90.00r.
Barber-Colman Company: *See—*
Mahoney, Robert J.; Dean, Donald N.; and Uzuanis, Joseph, Jr., 3,718,296.
Barnard, Russell D.: *See—*
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Barnes, George H.: *See—*
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Barnett, Karl F., to Cadillac Products, Inc. Bag dispenser. 3,718,251, Cl. 206-47.00r.
Barnewald, Rudolf: *See—*
Barten, Hans; Barnewald, Rudolf; and Hanich, Werner, 3,718,197.
Barr, William A.; Hahlbeck, Edwin C.; and Heine, Ferdinand L., to Milwaukee Gear Company. Gear structure and method of making the same. 3,718,052, Cl. 74-462.000.
Bartels, Herbert D., to Continental Can Company, Inc. Method of making stress relieved containers. 3,718,107, Cl. 113-116.00w.
Barten, Hans; Barnewald, Rudolf; and Hanich, Werner, to Klockner-Humboldt-Deutz Aktiengesellschaft. Conveyor belt weighing device. 3,718,197, Cl. 177-16.000.
Bartlett, Kenneth D. Terminal block covering means. 3,718,889, Cl. 339-103.00r.

Bate, Geoffrey; Echelmeier, Robert H.; Everett, Larry H.; Kehr, William D.; Schaps, Joseph E.; Taylor, Gerald; and Thornley, Richard F. M., to International Business Machines Corporation. Multi-track overlapped-gap magnetic head assembly. 3,718,776, Cl. 17-100.20c.

Batlles, Jorge Ferrer: *See—*
Salat, Carlos Ferrer; Batlles, Jorge Ferrer; and Riers, Juan Colombe, 3,718,664.

Batta, Louis Bela, to Union Carbide Corporation. Selective adsorption process for air separation. 3,717,974, Cl. 55-58.000.

Battelle-Entwicklungs-Gesellschaft m.b.H.: *See—*
Fischer, Horst; and Neufelder, Manfred, 3,718,430.

Batzer, Hans: *See—*
Lohse, Friedrich; Schmid, Rolf; and Batzer, Hans, 3,718,623.

Baumann, Heinz. Method of making fertilizer from chicken manure. 3,718,451, Cl. 71-9.000.

Baxter Laboratories, Inc.: *See—*
Cayle, Theodore, 3,718,739.

Baychem Corporation, mesne: *See—*
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Bayer Aktiengesellschaft: *See—*
Bock, Eugen; and Dollhausen, Manfred, 3,718,518.
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Bayless, Jack H.; and Penberthy, Walter L., Jr., to Esso Production Research Company. Insulation for a wellbore. 3,718,184, Cl. 166-57.000.

Bays, Marvin G.: *See—*
Babb, John J.; and Bays, Marvin G., 3,718,206.

Bazouin, Andre: *See—*
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Bear, Fred B. Fletching machine. 3,717,919, Cl. 29-208.00r.

Bearden, Edith Mae: *See—*
Bearden, William G.; Fast, Clarence R.; and Mallinger, Morton A., 3,718,088.

Bearden, William G.; deceased (by Bearden, Edith Mae; administratrix); Fast, Clarence R.; and Mallinger, Morton A.; deceased (by Mallinger, Zella K.; administratrix), to Amoco Production Company. Explosive fracturing method. 3,718,088, Cl. 102-21.000.

Beatenbough, Paul K.; Hutchins, Ward H.; and Richards, Gary E., to General Motors Corporation. Thermostatic vacuum positioner. 3,718,281, Cl. 237-2.00a.

Beaufort, Ronald E.: *See—*
Larraide, Edward; and Beaufort, Ronald E., 3,718,316.

Beaver, Thomas R.; to CTS Corporation. Method of making an electric switch. 3,718,106, Cl. 113-119.000.

Beck, Erich: *See—*
Patels, Gottfried; and Beck, Erich, 3,718,760.

Becker, Brant W.: *See—*
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Becker, James H.: *See—*
Wysocki, Joseph J.; Adams, James E.; Becker, James H.; Madrid, Robert W.; and Haas, Werner E., 3,718,380.
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Beckman Instruments, Inc.: *See—*
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Petersen, Arne J.; and Matsuyama, George, 3,718,569.

Becraft, Ardath M.; and Hammer, Clifford E., to United States of America, Air Force. Method of aligning laser beam by rotation. 3,718,398, Cl. 356-153.000.

Beesch, Otto: *See—*
Weyl, Helmut; Kauhl, Gunther; and Beesch, Otto, 3,718,425.

Behring Corporation: *See—*
Brown, Victor E.; Mora, Raul L.; and Morton, Evans T., 3,717,964.
Morton, Evans T.; and Vescio, Kimbel L., 3,717,965.

Bejach, Benton; and Bernhardt, Earl T., to Borg-Warner Corporation. Variable speed master-slave motor control system with continuous position adjustment. 3,718,845, Cl. 318-78.000.

Bejach, Benton, to Borg-Warner Corporation. Variable speed plural motor control system with incremental speed synchronization. 3,718,846, Cl. 318-85.000.

Bell & Howell Company: *See—*
Cooper, Dexter P., Jr., 3,718,389.
Morton, Robert B., 3,718,301.

Bell Telephone Laboratories, Incorporated: *See—*
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Angner, Ronald Joseph; and Daniele, Phillip Paul, 3,718,781.
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Erdman, William Charles; and Miller, Paul, 3,718,514.
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Fraser, David Bruce; O'Bryan, Henry Miles, Jr.; and Thomson, John, Jr., 3,718,723.
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Pelletier, Frank Palmer, 3,718,565.
Reese, Randall Douglas, 3,718,770.
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Bellanca, Joseph V., to McCain Manufacturing Corporation. Trading stamp saver books. 3,718,348, Cl. 283-8.500.

Bellos, Thomas J.; and Mange, Franklin E., to Petrolite Corporation. Aqueous salts of phosphate esters. 3,718,588, Cl. 252-32.500.

Beltone Electronics Corporation: *See—*
Cannon, Vernon W.; and Stowe, Gordon N., 3,718,763.

Belyaev, Jury Pavlovich: *See—*
Afanasiev, Vadim Nikolaevich; Belyaev, Jury Pavlovich; Gaiduchik, Vladimir Olegovich; Gruzin, Pavel Lukich; Konkin, Nikolai Alexandrovich; Megarsky, Valery Vasilievich; Okunev, Boris Nikolaevich; and Trokin, Jury Alexandrovich, 3,718,817.

Bender, Heinz: *See—*
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Benfield, John D. Pipe bending tool. 3,718,018, Cl. 72-31.000.

Bennett, Reginald Frank Charles: *See—*
Fothergill, Reginald Allan; Bennett, Reginald Frank Charles; Risley, Gerald Thomas; and Weeks, William Stanley, 3,718,918.

Berchtold, Robert F. High pressure bleed valve tool. 3,718,057, Cl. 81-15.400.

Berends, Emerson R., to Rockwell Manufacturing Company. Planer. 3,718,168, Cl. 144-117.00r.

Berg, Thomas L. Method and apparatus for decorating articles. 3,718,517, Cl. 156-234.000.

Berger, Karl Gustav; and Fernstrom, Gustaf Harry, to Atlas Copco Aktiebolag. Reversible pressure fluid actuated vane motor. 3,718,410, Cl. 418-15.000.

Bergstrom, Axel Emil. Heat reflecting laminate. 3,718,528, Cl. 161-1.000.

Bergwerksverband GmbH: *See—*
Gappa, Gunther; Knoblauch, Karl; Maier, Franz; Schwarte, Jurgen; and Steiner, Peter, 3,717,976.

Berkovitz, Robert A., 22.5 to Barnard, Russell D., 5% to Dolph, Norman, and, 5% to Felfe, Peter F. and 22.5% to Killion, John. Four Channel recording and reproducing system. 3,718,773, Cl. 179-100.1td.

Berlant, George, to New Hermes Engraving Corporation. Attachment kit for copying machine for engraving jewelry rings. 3,718,072, Cl. 90-62.00r.

Berman, Abraham; and Gerber, George V., to Vishay Intertechnology, Inc. Electrical components with flexible terminal means. 3,718,883, Cl. 338-322.000.

Bermender, Norman W., to North American Aviation, Inc. Gas generator charge with decreased temperature sensitivity. 3,718,094, Cl. 102-101.000.

Bermingham, Peter D.: *See—*
Dernovshek, Joseph Frank; and Bermingham, Peter D., 3,718,210.

Bernard, Marcel, to Societe Industrielle Honeywell Bull (Societe Anonyme). Testing device for differential amplifiers. 3,718,857, Cl. 324-57.00r.

Bernhardt, Earl T.: *See—*
Bejach, Benton; and Bernhardt, Earl T., 3,718,845.

Berry, Jean-Luc: *See—*
Dardaine, Edgar J.; and Berry, Jean-Luc, 3,718,246.

Berthold, Werner; Von Konig, Anita; and Timmler, Helmut, to Agfa-Gevaert Aktiengesellschaft. Stabilising developed photographic images. 3,718,468, Cl. 96-50.000.

Bessemer and Lake Erie Railroad Company: *See—*
Freeman, William H.; Peterson, Leavitt A.; and Wandrisco, Joseph M. (said Peterson assor. to said), 3,718,040.

Beste, Lawrence F.; Jones, Edward B.; and Yates, Paul C., to Du Pont de Nemours, E. I., and Company. Colloidal metal oxide sols in polar organic solvents. 3,718,584, Cl. 252-8.100.

Bethe, Eugene J., to Uniroyal Inc. Apparatus for molding foam articles. 3,718,417, Cl. 425-406.000.

Betts, Robert E., to United States of America, Army. Rocket motor with combined nozzle and suspension plate. 3,717,998, Cl. 60-255.000.

Beutel, Peter: *See—*
Dietsche, Wolfram; Adolphi, Heinrich; Beutel, Peter; and Koenig, Karl-Heinz, 3,718,661.

Bey, Paul P.; Giuliani, John F.; and Rabin, Herbert, to United States of America, Navy. Liquid medium for optical third harmonic generation. 3,718,602, Cl. 252-301.20r.

Beyerle, Rudi; and Stachel, Adolf; deceased (by Stachel, Inge; and Stachel, Sophie; heirs), to Cassella Farbwerke Mainkur Aktiengesellschaft. Basically substituted 2,4-(1H,3H)-quinazolindione derivatives. 3,718,648, Cl. 260-247.20a.

Bhakuni, Roop S.; and Cormany, Joseph L., Jr., to Goodyear Tire & Rubber Company, The. Cyanuric acid derivatives as finish additives. 3,718,587, Cl. 252-8.600.

Bibler, David R. Poultry handling system. 3,718,117, Cl. 119-16.000.

Bibler, David R. Poultry handling system. 3,718,118, Cl. 119-16.000.

Bidwell, Arthur W., to Magnode Products, Inc. Anode fitting. 3,718,571, Cl. 204-197.000.

Bidwell, Arthur W., to Magnode Products, Inc. Fluid fitting. 3,718,573, Cl. 204-297.00r.

Bio-Derivatives Corporation: *See—*
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Bird Island, Inc.: *See—*
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Bishop, Walton B.: *See—*
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Bixler, Kenneth D.: *See—*
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Black Clawson Company, The: *See—*
Plough, Irving L., 3,718,169.

Blackburn, Marvin J., to Vernon Tool Company. Automatic control system for tube expander tool. 3,718,017, Cl. 72-20.000.

Blackley, William D.: *See—*

Reinhard, Russell R.; and Blackley, William D., 3,718,695.

Blackmer, David E.: *See—*
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Blanchard, Clarence E., to Outboard Marine Corporation. Hydraulic arrangement for veritcally trimming a marine propulsion unit. 3,718,110, Cl. 115-41.oht.

Blatter, Herbert Morton: *See—*
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Bliss, E. W., Company: *See—*
Wilson, Walter W., 3,718,216.

Bloom, Donald W., Sr. Apparatus for correcting printing errors. 3,717,975, Cl. 355-78.000.

Bloomfield, Roger D.; and Wirth, Gary J., to Uniflo Systems Company. Vortex thruster for fluid propelled objects. 3,718,096, Cl. 104-155.000.

Bloomstein, Richard W. Signature and retrieval system. 3,718,908, Cl. 340-149.00a.

Blower, Warren A.; and Jerse, Emil P., to Sherwin-Williams Company, The. Vibrator for foundry molding and like machines. 3,718,318, Cl. 259-1.000.

Blum, Alvin S. Regional lung measuring device. 3,718,136, Cl. 128-2.080.

Bock, Eugen; and Dollhausen, Manfred, to Bayer Aktiengesellschaft. Process of preparing bonded materials using polyurethane adhesives which form bonds of immediate high strength. 3,718,518, Cl. 156-242.000.

Bogner, Richard D., to Ampex Corporation. Broadcast antenna assembly. 3,718,934, Cl. 343-770.000.

Bohdan Melnyk: *See—*
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Bohme, Horst; and Ahrens, Kurt-Henning, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. 5-Aryl-3H-1,2,4-dithiazoles and process for their manufacture. 3,718,659, Cl. 260-302.00r.

Bollinger, Edward R., Jr.: *See—*
Abarotin, Eugene V.; Bollinger, Edward R., Jr.; and Nicely, Thomas E., 3,718,064.

Bonner, Willard H.; and Craven, Robert L., to Du Pont de Nemours, E. I., and Company. Process of forming a uniform batt from staple fibers. 3,717,904, Cl. 19-66.00r.

Boomsma, Pieter: *See—*
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Booth, Ralph E.: *See—*
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Borkowski, Allan S.: *See—*
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Bosch, Robert, G.m.b.H.: *See—*
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Schleupen, Richard; and Ferdinand, Grob, 3,718,201.
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Bosch, Robert, Photokino GmbH: *See—*
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Bosworth, Delbert B.; and Fournier, Joseph R., to United Industrial Syndicate, Inc. Constant tensioning device for the chains of conveyors. 3,718,250, Cl. 198-208.000.

Botker, Kurt, to North American Philips Corporation. Ignition interlock system. 3,718,128, Cl. 123-179.00k.

Boudouris, Angelo; and Plumadore, Harold M., to Eprad Incorporated. Pick-off device. 3,718,388, Cl. 352-92.000.

Bowler, Lauren L.; and Harned, John L., to General Motors Corporation. Hydraulic anti-lock brake control system. 3,718,376, Cl. 303-21.0cg.

Bowler, Laurence L.; and Harned, John L., to General Motors Corporation. Hydraulic anti-lock brake control system. 3,718,375, Cl. 303-21.00b.

Bowman, Arthur J., Jr.: *See—*
Milanowski, Floyd J.; and Bowman, Arthur J., Jr., 3,718,093.

Box, William A.; and Wojnar, Joseph A., to United States Steel Corporation. Gauge device for alignment of rolls of a rolling mill. 3,718,019, Cl. 72-35.000.

Boy de la Tour, Roger: *See—*
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Boyd, Loyis J.: *See—*
Hafs, Harold D.; and Boyd, Loyis J., 3,718,740.

Boyer, Jackson S.; and Cassar, Richard D., to Sun Oil Company. Vulcanization of ethylene-propylene-diene terpolymer. 3,718,628, Cl. 260-79.50b.

Bracken, Thomas W.; Laughon, Thomas C.; and Smith, Gerald C., to Eastman Kodak Company. Method and apparatus for facilitating the packaging and pricing of photographic prints. 3,718,807, Cl. 235-92.0pd.

Braden, John R. Self-adjusting stop valve actuating mechanism. 3,718,311, Cl. 251-77.000.

Brady, William A., Jr., to Certain-Teed Saint Gobain Insulation Corporation. Packaging compressible material. 3,717,973, Cl. 53-124.00e.

Brainin, Herbert, to Vitredent Corporation. Tooth replacement. 3,717,932, Cl. 32-10.00a.

Branche, William H., to Carrier Corporation. Ignition device for a gas fired appliance. 3,718,838, Cl. 317-93.000.

Brandenberg, Karl; and Kautz, Wilbert C., to ARO Corporation, The. Reciprocating pump control system. 3,718,409, Cl. 417-326.000.

Brandon, Clarence W., 12 1/2% to Brandon, Orpha B., 50% to Hardin, Nat A., Newton, Catherine H., Wright, Hazel H. and 5% to Jacob, Harvey B. Method and apparatus for forming and/or augmenting an energy wave. 3,718,186, Cl. 166-248.000.

Brandon, Orpha B.: *See—*
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Braniski, Alexandru I.; Ionescu, Teodor; and Deica, Neculai, to Institutul de Cercetari Metalurgice. Refractory aluminous cements. 3,718,492, Cl. 106-104.000.

Brazier, Robert Leo, to Sangamo Electric Company. Capacitor with terminal clips. 3,718,844, Cl. 317-258.000.

Brewster Corporation, The: *See—*
Murray, I. Gillis, 3,718,306.

Bridges, George F.: *See—*
Adler, Franklin P.; Bailey, John D.; and Bridges, George F., 3,718,100.

Bridges, Peter John: *See—*
Faulkner, Roy Gwyn; and Bridges, Peter John, 3,718,443.

Bright, Elvin M. Apparatus for forming attachable incompletely-cured plastic wafers. 3,718,524, Cl. 156-500.000.

Brija, Raymond L.: *See—*
Bukowski, Raymond J.; Brija, Raymond L.; and Yanikoski, Florian F., 3,718,244.

Brindley, Giles Skey, to National Research Development Corporation. Implantable electrode connector device. 3,718,134, Cl. 128-2.10e.

Bringman, Robert D. Stabilizing apparatus. 3,718,345, Cl. 280-289.000.

Brink, David L.; and Thomas, Jerome F., to University of California, The Regents of the. Pollutant-free process for producing a clean burning fuel gas from organic-containing waste materials. 3,718,446, Cl. 48-209.000.

Bristol-Myers Company: *See—*
Nakanishi, Koji; and Gylys, Jonas A. (said Gylys assor. to), 3,718,745.

Bristow, Robert Lee: *See—*
Amin, Ashok Babubhai; and Bristow, Robert Lee, 3,718,729.

British Aircraft Corporation Limited: *See—*
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British Insulated Callender's Cable Limited: *See—*
Cleaver, John Stephen; Guilford, Peter; Kimpton, Frederick James; Page, Thomas John; and Steinberg, Norman Richard, 3,718,273.

British Nuclear Design & Construction Limited: *See—*
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Britton, Leon R.; Vojir, Frank S.; and Wright, William W., to Guardian Electric Manufacturing Company. Push button pulse signal generator. 3,718,828, Cl. 310-15.000.

Brock, Donald J., to Texas Instruments, Incorporated. Vehicle anti-theft system. 3,718,202, Cl. 180-114.000.

Broemmelsiek, Marc W.: *See—*
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Brown, Victor E.; Mora, Raul L.; and Morton, Evans T., to Behring Corporation. Module frames. 3,717,964, Cl. 52-79.000.

Brunner, Fred William, to Mannings, Inc. Pancake-making machine. 3,718,487, Cl. 99-353.000.

Buckley, Francis T.; Riek, Raymond F.; and Christensen, Donald I., to Monsanto Company. Process for production of interlayer safety-glass. 3,718,516, Cl. 156-106.000.

Bufkin, Dale E.; and Murphy, Willard G., to McGraw-Edison Company. Coffee maker basket and filter. 3,718,084, Cl. 99-312.000.

Bukowski, Raymond J.; Brija, Raymond L.; and Yanikoski, Florian F., to Motiongraph, Inc. Apparatus for reading pre-programmed cards and printing thereon. 3,718,244, Cl. 197-127.000.

Bulfer, Andrew Frederick; and Tammaru, Enn, to Bell Telephone Laboratories, Incorporated. NAND gate realization of the N-input parity function. 3,718,904, Cl. 340-146.1ag.

Bunger, David A., to Baldwin, D. H., Company. Multi-tone arpeggio system for electronic organ. 3,718,748, Cl. 84-1.240.

Burgess, James P.; and Polkinghorn, Melvin W., to International Telephone and Telegraph Corporation. Lamp socket. 3,718,892, Cl. 339-126.00r.

Burley, Harvey A., to General Motors Corporation. Vacuum actuated ignition spark energy level control circuit. 3,718,124, Cl. 123-148.0dc.

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Bushick, Ronald D.; Norman, Oscar L.; and Spinelli, Harry J. Formation of naphthalene-2,6-dicarboxylic acid. 3,718,690, Cl. 260-515.00p.

Buss, Waldeen C.; and Kluksdahl, Harris E., to Chevron Research Company. Reforming with a platinum-tin-iridium catalyst. 3,718,578, Cl. 208-139.000.

Busse, Ewald A.; and Raker, Glen W. Vacuum collar for roofing kettles and the like. 3,718,131, Cl. 126-343.50a.

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Butter, Donald A.; Kern, Edmund R.; and Menelly, Richard A., to International Telephone and Telegraph Corporation. Cavity pellet emissive electrode. 3,718,831, Cl. 313-346.00r.

Butz, Erich Dagobert. Hoist apparatus. 3,718,362, Cl. 294-112.000.

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Cairns, Hugh; and Minshull, Robert, to Fisons Limited. Benzodipyrones. 3,718,668, Cl. 260-345.200.

Camara, Elias Humberto: *See—*
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Camilleri, Louis T.; and Huebner, Manfred H., to Hooker Chemical Corporation. Gel prevention in polyurethanes. 3,718,622, Cl. 260-75.0np.

Canadian Patents and Development Limited: *See—*
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Cannon, Vernon W.; and Stowe, Gordon N., to Beltone Electronics Corporation. Audiometer apparatus. 3,718,763, Cl. 179-1.00n.

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Carlson, George R. Automatic tape-controlled work finishing machine. 3,717,893, Cl. 15-97.00r.

Carlson, Harrison Cornforth; and Hess, Wayne Thomas, to Du Pont de Nemours, E. I., and Company. Process for recovering ammonia from a gaseous mixture containing NH_3 and HCN. 3,718,731, Cl. 423-238.000.

Carlton, Fred W.; and Carlton, Jesse W. Log-cutting apparatus. 3,718,060, Cl. 83-84.000.

Carlton, Jesse W.: *See—*
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Celanese Corporation: *See—*
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Chateau, Frederick D. Eyebrow stencilling method and apparatus. 3,718,145, Cl. 132-88.500.

Chatin, Remy, to Moulinage et Retorderie de Chavanoz. Process for producing fancy effect yarns. 3,717,959, Cl. 57-160.000.

Chavee, Rene M. J., to Fabrique Nationale d'Armes de Guerre, Societe Anonyme. Device for shooting a projectile. 3,717,946, Cl. 42-1.00f.

Chen, Nai Yuen; and Yan, Tsoung-Yuan, to Mobil Oil Corporation. Control of hydrocracking process for constant conversion. 3,718,577, Cl. 208-108.000.

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Christensen, Robert I.; and Larimore, David B., to Chevron Research Company. Hydrogen purification. 3,718,734, Cl. 423-228.000.

Christmann, John L., to Merrick Scale Mfg. Company. Mass measuring system applied to belt conveyors. 3,718,031, Cl. 73-67.200.

Chvatlinsky, Kurt, to Olympia Werke AG. Apparatus for storing typing commands given in too rapid succession by keys. 3,718,243, Cl. 197-16.000.

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Clark Equipment Company: *See—*
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Clay, John Armstrong, to Turnbull Marine Design Company Limited. Tail-shaft bearing assembly. 3,718,378, Cl. 308-36.100.

Clayton, William J., to Mobil Oil Corporation. Permeable thermoplastic film product and method. 3,718,059, Cl. 83-2.000.

Cleaver, John Stephen; Guilford, Peter; Kimpton, Frederick James; Page, Thomas John; and Steinberg, Norman Richard, to British Insulated Callender's Cable Limited. Kit of parts for use in joining electric cables. 3,718,273, Cl. 228-15.000.

Clegg, Samuel E. Apparatus for rooted plant excavating. 3,717,944, Cl. 37-2.00r.

Clements, Frank H., to Amoco Production Company. Core drilling with air containing polymer in oil. 3,718,195, Cl. 175-58.000.
Clements, Paul Bernard, to Words on Wheels Limited. Tape recorders providing replay without stopping or rewinding. 3,718,775, Cl. 179-100.20t.
Cochran, Raymond J., to Fairfield Plastics Incorporated. Dispenser with turn cap. 3,718,239, Cl. 222-548.000.
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Conger, Marvin T.; and Evans, Theodore A., to Goodyear Tire & Rubber Company, The. Polyurethane form reticulated by fire-polishing method. 3,718,613, Cl. 260-2.5bd.
Conklin, John R., to De Laval Separator Company, The. Basket centrifuge with self-triggering sludge discharge. 3,718,278, Cl. 233-19.00a.
Conrad Industries, Inc.: *See—*
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Cooper, Dexter P., Jr., to Bell & Howell Company. Image display from continuously moving image carrier. 3,718,389, Cl. 352-109.000.
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Dafler, Gene L.; and Magyar, Lorand W., to General Motors Corporation. Circuit breaker. 3,718,162, Cl. 337-94.000.
Dahle, Norman A.; and Doyle, William C., Jr., to Gulf Research & Development Company. Combating unwanted vegetation with 2-aryl-5-substituted 1,3,4-oxadiazoles. 3,718,452, Cl. 71-92.000.
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Dark, Patrick M., to Moog Inc. Screwdown control system for rolling mills. 3,718,016, Cl. 72-8.000.
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Davis, Jefferson W. Alkylidine and arylidine amino acid esters, and alkyl and aryl amino acid esters. 3,718,688, Cl. 260-482.00r.
Davis, Richard H. Color data acquisition camera. 3,718,074, Cl. 95-1.100.
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Dernovshek, Joseph Frank; and Bermingham, Peter D., to Goodyear Tire & Rubber Company, The. Rotating brake disc subassembly with segmented beryllium core. 3,718,210, Cl. 188-218.0xl.

Deschenes, Raymond J.; and Macdonald, Robert N., to Data Card Corporation, mesne. Terminal unit for credit account maintenance system. 3,718,764, Cl. 179-2.0dp.

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Fenyes, Joseph G. E., to Chevron Research Company. N-Phenyl sulfenamides and their use as fungicides and onicides. 3,728,738, Cl. 424-32.00h.

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Garver, Robert V., to United States of America, Army. Phase shifter having at least one T-section LC circuit. 3,718,873, Cl. 333-31.00r.

Gates, Marvin A.; and Parks, John H., to Caterpillar Tractor Company. Hydraulic governor. 3,718,127, Cl. 123-140.000.

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Geld, Isidore, to United States of America, Navy. Cathodic protection anode with sections replaceable underwater. 3,718,570, Cl. 204-196.000.

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Germano, Victor V., to Diamond Shamrock Corporation. Coated metal and method. 3,718,509, Cl. 148-6.200.

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Gervay, Joseph Edmond; and Walker, Peter, to Du Pont de Nemours, E. I., and Company. Photopolymerizable elements containing hydrophiliccolloids and polymerizable monmers for making gravure printing plate resists. 3,718,473, Cl. 96-83.000.

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Gibellina, Michael C. Pool cleaning device. 3,718,148, Cl. 134-167.00r.

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Glindmeyer, Friedrich, to William Prym-Werke KG. Method of connecting slide fasteners to fly strips for trousers or the like. 3,718,105, Cl. 112-265.000.

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Gourdine, Meredith C.; and Law, S. Edward, to Gourdine Systems, Incorporated. Electrostatic mass per unit volume dust monitor. 3,718,029, Cl. 73-28.000.

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Graf, Carlton Eugene; Skogsholm, Einar Aasen; and Volkmann, Werner Karl, to General Electric Company. Adjustable speed polyphase A-C motor drive utilizing an in-phase current signal for motor control. 3,718,847, Cl. 318-227.000.

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Grothoff, Gisela. Refillable aerosol dispenser. 3,718,165, Cl. 141-20.000.
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Haddad, Ihsan A.; and Rosse, Thomas A., to Instrumentation Laboratory, Inc. Electrode assembly. 3,718,567, Cl. 204-195.00p.
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Halaby, Josef. Communication system with provision for concealing intelligence signals with noise signals. 3,718,765, Cl. 179-1.50m.
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Hart, Jack P., to General Motors Corporation. Regenerator seal. 3,718,180, Cl. 165-9.000.
Harvey, Donald M., to Eastman Kodak Company. Interlocking dual purpose slide tray structure for forming a single tray or a pair of trays. 3,718,392, Cl. 353-111.000.
Hasbrouck, Leo J.; Madden, Bill C.; Rew, Robert P.; Sussenguth, Edward H.; and Wierzbicki, John R., to International Business Machines Corporation. Instruction execution unit. 3,718,912, Cl. 340-172.500.
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Hegar, Frank; and Fleskes, Timothy E., to Warn-Belleview, Inc. Wheel hub clutching mechanism. 3,718,213, Cl. 192-67.00r.

Heimann, Werner; and Lossa, Ulrich, to Palitex Project Company GmbH. Carrier for packages of textile yarn. 3,717,989, Cl. 57-58.520.

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Herrera, Crisogono. Automatic geographical position indicator. 3,718,042, Cl. 73-178.00r.

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Sawamura, Mitsuyoshi; and Hihara, Takeshi, 3,718,799.

Hill, William L., to Sun Oil Company. Method and system for wellbore protection when explosively stimulating earth formations. 3,718,188, Cl. 166-299.000.

Hill, William L., to Continental Oil Company. Method for creating permeability in sulfur deposits. 3,718,366, Cl. 299-4.000.

Hillman, James George Edward, to Molins Machine Company Limited. Machine for unloading trays of articles. 3,718,224, Cl. 214-302.000.

Hilmer, Elwyn P. Portable hand winch and anchoring and stabilizing means. 3,718,317, Cl. 254-186.0hc.

Hines, Charles E., to Outboard Marine Corporation. Series-parallel battery system and switch therefor. 3,718,848, Cl. 320-7.000.

Hinkley, David F., to Merck & Co., Inc. Food composition with isoascorbic acid-phosphate as an antioxidant. 3,718,482, Cl. 99-150.000.

Hirobe, Masaaki: *See*—
Okamoto, Toshihiko; Hirobe, Masaaki; Suzue, Seigo; Nagatsu, Yoshio; Ushiyama, Keiichi; Satoh, Susumu; and Irikura, Tsutomu, 3,718,656.

Hitachi, Ltd.: *See*—
Oya, Yuichiro; and Hayasaka, Akio, 3,718,780.

Hnizda, Vincent F., to Ethyl Corporation. Jet fuel additive. 3,718,444, Cl. 44-66.000.

Hochli, Beat: *See*—
Moser, Kurt; and Hochli, Beat, 3,718,028.

Hofer, Friedrich Wilhelm, to Bosch, Robert, G.m.b.H. Arrangement for controlling the brake systems of trailers or the like. 3,718,373, Cl. 303-7.000.

Hoffmann, Irmgard: *See*—
Kuch, Heinz; and Hoffmann, Irmgard, 3,718,645.

Hoffmann-La Roche Inc.: *See*—
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,718,686.
Gray, George William, 3,718,032.

Hoffmeister, Hansmartin, to Oy Nokia Ab Finnish Cable Works. Connection plug for a current supply rail. 3,718,886, Cl. 339-21.00r.

Hofmann, Wilfried: *See*—
Pfeifer, Josef; Ambraschka, Kasimir; Koopmann, Adolf; Hofmann, Wilfried; Dietrich, Karl-Heinz; and Rauffer, Walter, 3,718,391.

Hogberg, Knut Bertil: *See*—
Eriksoo, Edgar; Fex, Hans; Hogberg, Knut Bertil; Mollberg, Rene; and Rohte, Oskar, 3,718,694.

Holler, Albert, to Western Electric Company, Incorporated. Multiple connector assembly system for interconnecting strands of cables without creating a substantially enlarged section therein. 3,718,893, Cl. 339-176.00m.

Holliday, Robert G., to Xerox Corporation. Microfiche indexer. 3,718,390, Cl. 353-27.000.

Hollwedel, Henry C., Jr., to George Lithograph Company. Machine for producing plates and prints from microfilm. 3,718,395, Cl. 355-27.000.

Holmes, Robert C., Jr., to Mark Products, Inc. Seismometer with spring spider suspension. 3,718,900, Cl. 340-17.000.

Holovka, John M.; and Hurley, Edward, Jr., to Marathon Oil Company. Preparation of mixed unsymmetrical ethers. 3,718,701, Cl. 260-611.00r.

Holt, Jan D.: *See*—
Thornton, Duane V.; and Holt, Jan D., 3,718,099.

Holt, William J.; and Boy de la Tour, Roger, to Neuro Systems Inc., mesne. Electrotherapy machine. 3,718,132, Cl. 128-1.00c.

Holub, Fred F.: *See*—
Hibbs, Louis E., Jr.; Holub, Fred F.; and Darrow, Kenneth A., 3,718,447.

Holzmann, Rainer; Kader, Reiner; and Thomas, Alfred, to Kautex-Werk Reinold Hagen. Method of blow molding hollow thermoplastic bodies. 3,718,724, Cl. 264-98.000.

Holzwarth, James C.: *See*—
Rice, Hal H.; and Holzwarth, James C., 3,718,172.

Honma, Shiro: *See*—
Tomoshige, Toru; and Honma, Shiro, 3,718,635.

Hood, John W.: *See*—
Smith, Edmund G.; and Hood, John W., 3,718,582.

Hook, Melvin S., to Burns Machine Co. Pressure switch with overtravel means on switch actuating arm for maintaining load on switch during small pressure fluctuations. 3,718,789, Cl. 200-83.00r.

Hooker Chemical Corporation: *See*—
Camilleri, Louis T.; and Huebner, Manfred H., 3,718,622.

Hoover, Herbert, III: *See*—
Armstrong, Ramsey C.; and Hoover, Herbert, III, 3,718,535.

Horlacher, Joseph D.: *See*—
Moore, George E.; and Horlacher, Joseph D., 3,718,232.

Horlenko, Theodore, to Celanese Corporation. Distillation process for recovering substantially anhydrous formic acid from aqueous solutions. 3,718,545, Cl. 203-15.000.

Horwitz, Joshua; Gordon, Bernard M.; and Becker, Brant W., to Gordon Engineering Company. Bipolar floating input, particularly for digital panel meters. 3,718,923, Cl. 340-347.0nt.

Hough, William T., mesne: *See*—
Siebentritt, Frank H.; and Silvera, Esteban, 3,718,157.

Howard, Dean D.; and Cross, David C., to United States of America, Navy. Automatic digital error detector for radar range tracking. 3,718,927, Cl. 343-7.400.

Howell, Cleves H., Jr.: *See*—
Jones, Kenneth P.; and Howell, Cleves H., Jr., 3,718,041.

Howell, Edith S.: *See*—
Jones, Kenneth P.; and Howell, Cleves H., Jr., 3,718,041.

Huber, John Richard, to Eastern Rotorcraft Corporation. Strap adjuster devices. 3,718,315, Cl. 254-164.000.

Huebner, Manfred H.: *See*—
Camilleri, Louis T.; and Huebner, Manfred H., 3,718,622.

Huele, Hendrik Teunis, to N.V. Hollandse Signaalapparaten. Microwave antenna. 3,718,933, Cl. 343-768.000.

Hughes Aircraft Company: *See*—
Myer, Jon H., 3,718,761.

Hughes, Thomas R.; and Sieg, Robert P., to Chevron Research Company. Gasoline production. 3,718,576, Cl. 208-93.000.

Hull, Donald R.; and Simonton, Robert D., to Dynalite Corporation. Battery element casting machine. 3,718,174, Cl. 164-154.000.

Hull, Richard N.: *See*—
Jacobs, Lloyd K.; and Hull, Richard N., 3,718,554.

Hull, Roy: *See—*
Farrand, Roy; and Hull, Roy, 3,718,678.
Hunt, Mack W.: *See—*
Rogers, Lynn C.; and Hunt, Mack W., 3,718,589.
Hurley, Edward, Jr.: *See—*
Holovka, John M.; and Hurley, Edward, Jr., 3,718,701.
Hurst, Gerald L., to Kinetics International Corporation. Porous particles containing dispersed organic liquid and gaseous components. 3,718,512, Cl. 149-2.000.
Huskins, Chester W.: *See—*
Ayers, Orval E.; and Huskins, Chester W., 3,717,997.
Hutchins, Ward H.: *See—*
Beatenbough, Paul K.; Hutchins, Ward H.; and Richards, Gary E., 3,718,281.
Huver, Lawrence L.: *See—*
Quinlan, William J.; and Huver, Lawrence L., 3,717,900.
Hvoslef, Peer. Life-boats. 3,717,889, Cl. 9-4.00r.
Hydraulic Industries, Inc.: *See—*
Tennis, Francis H., 3,718,159.
I-T-E Imperial Corporation: *See—*
Kussy, Frank W.; and Heberlein, Gustave E., Jr., 3,718,875.
Ideal Industries, Inc.: *See—*
Wells, Peter M., 3,717,906.
IIT Research Institute: *See—*
Dally, James W., 3,718,066.
Liber, Theodore, 3,718,065.
Ikrath, Kurt; and Acker, Morris, to United States of America, Army. Combined multi-polarization loopstick and whip antenna. 3,718,932, Cl. 343-728.000.
Imabayashi, Ziro: *See—*
Nezu, Kazuo; Imabayashi, Ziro; Watanabe, Kazutaka; Iritani, Tadamitsu; Kataoka, Kouju; and Yoshioka, Michio, 3,718,762.
Imajyo, Yasutaka: *See—*
Tanaka, Hideo; Imajyo, Yasutaka; Takano, Ikuo; Takahashi, Jiro; and Oka, Kazumichi, 3,718,840.
Imperial Chemical Industries Limited: *See—*
Denny, Patrick John; and Dowden, Dennis Albert, 3,718,498.
Entwisle, John Hubert; and Griffiths, Robert William (said Entwisle assor. to), 3,718,457.
Farrand, Roy; and Hull, Roy, 3,718,678.
Hart, Charles Richard; Nield, Eric; and Rose, John Brewster, 3,718,620.
Impex-Essen GmbH: *See—*
Schneider, Fritz, 3,718,271.
Index-Werke KG: *See—*
Lahm, Heinrich, 3,717,912.
Industrial Modular Systems Corporation: *See—*
Lasch, Cecil A., Jr., 3,718,371.
Industrie A. Zanussi S.p.A.: *See—*
Mazza, Lamberto, 3,718,149.
Information Displays, Inc.: *See—*
Premru, Brian Allan; and Nash, James H., Jr., 3,718,832.
Ingersoll-Rand Company: *See—*
Miller, Stanley M., 3,718,313.
Innes, Robert Arthur: *See—*
Cooke, William Ernest; Cote, Jacques Francois; Innes, Robert Arthur; Spooner, Roy Cowieson; and Kellermann, Walter Maria Eduard, 3,718,547.
Inoue, Eiichi; and Yamase, Toshihiro, to Canon Kabushiki Kaisha. Positive working photographic process for producing colored images of metal chelates of sulfur compounds. 3,718,467, Cl. 96-48.00r.
Insolio, Thomas A., to Fletcher-Terry Company, The. Machine for feeding, scoring, and breaking smal diameter glass tubing. 3,718,268, Cl. 225-2.000.
Inspiration Consolidated Copper Company: *See—*
Jacob, Harry M.; and Lorenzen, John C., 3,718,176.
Institute of Gas Technology: *See—*
Fleming, Donald Kingsley; Randhava, Sarabjit Singh; and Camara, Elias Humberto, 3,718,418.
Institute of Paper Chemistry, The: *See—*
Kesler, Richard B., 3,718,030.
Institutul de Cercetari Metalurgice: *See—*
Braniski, Alexandru I.; Ionescu, Teodor; and Deica, Neculai, 3,718,492.
Instrumentation Laboratory, Inc.: *See—*
Haddad, Ihsan A., 3,718,562.
Haddad, Ihsan A.; and Rosse, Thomas A., 3,718,567.
Krebs, William Michael, 3,718,566.
Newelt, Robert T., 3,718,568.
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Instytut Metalurgii Zelaza: *See—*
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Intercontinental Plastics Manufacturing: *See—*
Sauriol, John T., 3,717,963.
Internationak Knitlok Corporation: *See—*
Hamano, Hisashi, 3,718,725.
International Business Machines Corporation: *See—*
Bate, Geoffrey; Echelmeier, Robert H.; Everett, Larry H.; Kehr, William D.; Schaps, Joseph E.; Taylor, Gerald; and Thornley, Richard F. M., 3,718,776.
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Hasbrouck, Leo J.; Madden, Bill C.; Rew, Robert P.; Sussenguth, Edward H.; and Wierzbicki, John R., 3,718,912.
Scray, Eugene J., Jr.; and Wilder, Donald L., 3,718,910.
International Flavors & Fragrances, Inc.: *See—*
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International Minerals & Chemical Corporation: *See—*
Hamer, Martin, 3,718,653.
International Nickel Company, Inc., The: *See—*
Faulkner, Roy Gwyn; and Bridges, Peter John, 3,718,443.
International Paper Company, mesne: *See—*
Furbeck, Warren R., 3,717,905.
Lee, Charles A., 3,718,115.
International Research & Development Company Limited: *See—*
Bailey, Henry Philip, 3,718,540.
International Standard Electric Corporation: *See—*
Collins, Robin Ashley, 3,718,931.
Kudritzki, Hans, 3,718,785.
International Telephone and Telegraph Corporation: *See—*
Bain, George W.; and Haak, Fred C., 3,718,836.
Burgess, James P.; and Polkinghorn, Melvin W., 3,718,892.
Butter, Donald A.; Kern, Edmund R.; and Menelly, Richard A., 3,718,831.
Ellis, Lynn W., 3,718,767.
Marks, John L., 3,717,917.
Ranghelli, Joseph C.; and Perrott, Emmanuel J., 3,718,935.
Ionescu, Teodor: *See—*
Braniski, Alexandru I.; Ionescu, Teodor; and Deica, Neculai, 3,718,492.
Irikura, Tsutomu: *See—*
Okamoto, Toshihiko; Hirobe, Masaaki; Suzue, Seigo; Nagatsu, Yoshio; Ushiyama, Keiichi; Satoh, Susumu; and Irikura, Tsutomu, 3,718,656.
Iritani, Tadamitsu: *See—*
Nezu, Kazuo; Imabayashi, Ziro; Watanabe, Kazutaka; Iritani, Tadamitsu; Kataoka, Kouju; and Yoshioka, Michio, 3,718,762.
Irmscher, Klaus; Von Werder, Fritz; Bork, Karl-Heinz; and Kraft, Hans-Gunther, to Merck Patent Gesellschaft mit beschrankter Haftung. Inverted steps for the preparation of 9α-fluoro-16-methylene-prednisolone or prednisone and 21-esters thereof. 3,718,542, Cl. 195-51.00e.
Irvin Industries, Inc.: *See—*
Pearsall, Gerald Robert, 3,718,902.
Isaacs, Hugh S.: *See—*
Salzano, Francis J.; Davis, Andrew M.; and Isaacs, Hugh S., 3,718,546.
Ishikawa, Mineo, to Toyoda Koki Kabushiki Kaisha. Sizing device for measuring the diameter of a workpiece of non-circular cross-section. 3,717,934, Cl. 33-147.00n.
Ishikawa, Mutsuo: *See—*
Nakagawa, Shiro; and Ishikawa, Mutsuo, 3,718,917.
Itek Corporation: *See—*
Ekman, Carl F. W., 3,718,465.
Ito, Tadashi: *See—*
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ITT Industries, Inc.: *See—*
Keller, Hans, 3,718,870.
Iwatsu Electric Co., Ltd.: *See—*
Matsuoka, Hideo, 3,718,825.
Jackson, Byron, Inc.: *See—*
Scott, Lyle B., 3,718,183.
Jackson, Richard H.; and Warner, Dale J., to Gits Bros. Mfg. Co., Inc. Shaft seal and method of manufacture. 3,718,336, Cl. 277-40.000.
Jacob, Ezekiel J. Process for production of poromeric products. 3,718,561, Cl. 204-180.
Jacob, Harry M.; and Lorenzen, John C., to Inspiration Consolidated Copper Company. Spreader wheel. 3,718,176, Cl. 164-278.000.
Jacob, Harvey B.: *See—*
Brandon, Clarence W., 3,718,186.
Jacob, Jean-Baptiste, to Compagnie Industrielle des Telecommunications Cit-Alcatel and Societe Lannionnaise d'Electronique Raute de Perros-Guirec. Path finding system for time-division multiplexed telephone communication network. 3,718,769, Cl. 179-18.00j.
Jacobs, Harold, to United States of America, Army. Photon radiation detector. 3,718,820, Cl. 250-83.30h.
Jacobs, Lloyd K.; and Hull, Richard N. Cathodic protection for water tanks. 3,718,554, Cl. 204-147.000.
Jacobsen Manufacturing Company: *See—*
Rogers, Chester D., 3,718,192.
Jacobson, Howard W., to Du Pont de Nemours, E. I., and Company. Sheet-like alpha aluminum oxide. 3,718,494, Cl. 106-291.000.
Jahnke, Ullrich: *See—*
Werdehausen, Achim; Jahnke, Ullrich; Jakobi, Gunter; and Walther, Guntram, 3,718,597.
Jakobi, Gunter: *See—*
Werdehausen, Achim; Jahnke, Ullrich; Jakobi, Gunter; and Walther, Guntram, 3,718,597.
James, Peter Henry, to Quartz Investments Limited. Child proof containers. 3,718,230, Cl. 220-60.00a.
Janssen, Donald E.: *See—*
Spencer, John; and Janssen, Donald E., 3,718,470.

Janssen, Donald E.; Reynolds, Delbert D.; and Cossar, Bernard C., to Eastman Kodak Company. Development accelerators for image transfer systems. 3,718,464, Cl. 96-29.00d.

Janssen, Hans Georg, to Aktien-Gesellschaft "Weser". Guide arrangement. 3,718,108, Cl. 114-181.000.

Japan Monoply Corporation, The: *See—*
Kobari, Masao; Hagiwara, Hiroshi; and Uchiyama, Kensuke, 3,718,153.

Jardinier, Pierre Charles Jules; and Simonnot, Jack Paul Robert, to Societe d'Etudes et de Recherches de Ventilation et d'Aeraulique. Device for controlling air flow in ventilation pipes. 3,718,160, Cl. 138-46.000.

Jenkins, Philip W., to Eastman Kodak Company. Silver halide emulsions containing holopolar cyanine dyes with urazole nucleus. 3,718,477, Cl. 96-140.000.

Jennings, Uel Duane; and Sparling, Wayne Clifford, to Du Pont de Nemours, E. I., and Company. Yarn package. 3,718,288, Cl. 242-178.000.

Jennis, Murray, to Goodman, H., & Co. Hair curlers. 3,718,144, Cl. 132-39.000.

Jensen, Jens-Lauge Bolund. Method of packaging foodstuffs and a packaging for employing the method. 3,718,486, Cl. 99-214.000.

Jensen, Klaus: *See—*
Wienand, Michael; Jensen, Klaus; Primessing, Franz; and Alfter, Franz-Werner, 3,717,916.

Jerse, Emil P.: *See—*
Blower, Warren A.; and Jerse, Emil P., 3,718,318.

Jespers, Gerard P., to Ferro-Corporation. Automatic slot sealing system for continuous furnaces. 3,718,320, Cl. 263-8.00r.

Joaquin, Jean. Fish fillet product and method for making. 3,718,481, Cl. 99-111.000.

Joh, Yasushi; and Mimura, Koji, to Mitsubishi Rayon Company Limited. Acrylic fiber and a method for manufacturing the same. 3,718,716, Cl. 260-898.000.

Johnson, Allan S., to Tapmatic Corporation. Tapping attachment adapted for numerical control. 3,717,892, Cl. 10-89.00f.

Johnson, Anna D. Driver alertness alarm system. 3,718,921, Cl. 340-279.000.

Johnson, Clarence. Force measuring instrument. 3,718,038, Cl. 73-141.00a.

Johnson, Elizabeth W.: *See—*
Coleman, Margot O.; and Johnson, Elizabeth W., 3,718,529.

Johnson, Jay: *See—*
Gardner, Charles R.; and Johnson, Jay, 3,717,899.

Johnston, Laird E.: *See—*
Harned, John L.; and Johnston, Laird E., 3,718,377.

Johnstone, Duncan, to DP Way Corporation. Refuse hoppers. 3,717,901, Cl. 15-314000.

Jones, Douglas George: *See—*
Abramson, Carl Newton; and Jones, Douglas George, 3,718,768.

Jones, Edward B.: *See—*
Beste, Lawrence F.; Jones, Edward B.; and Yates, Paul C., 3,718,584.

Jones, Kenneth P.; and Howell, Cleves H., Jr.; deceased (by Howell, Edith S.; executrix). Projectile deceleration device. 3,718,041, Cl. 73-167.000.

Jones, Kermith W. Foam brush. 3,717,898, Cl. 15-244.00r.

Jones, Thurman Raiston, Jr., to Du Pont de Nemours, E. I., and Company. Pump wear plate viscometer. 3,718,414, Cl. 425-146.000.

Jones, Trevor O., to General Motors Corporation. Occupant restraint system. 3,718,332, Cl. 280-150.0ab.

Jones, William Felix, Jr., to Borg-Warner Corporation. Camlock threaded stud actuator. 3,718,058, Cl. 81-532.000.

Joo, Louis A.; McKee, John A.; and Shea, Frederick L., to Great Lakes Carbon Corporation. Process for the production of carbon filaments from coal tar pitch. 3,718,493, Cl. 106-273.00r.

Joslyn Mfg. and Supply Co.: *See—*
Cunningham, Francis V., 3,718,749.

Joyce, James W., Jr.; and Villarroel, Fernando, to United States of America, Army. Flow meter for indirectly measuring the flow of blood from a blood pump. 3,718,044, Cl. 73-223.000.

Jungfer, Hans: *See—*
Ranke, Gerhard; and Jungfer, Hans, 3,718,006.

Juri, Isao; Koguchi, Kazuo; Kuroiwa, Toshimi; and Koken, Tomoyuki, to Tokyo Shibaura Electric Company, Ltd. Semiconductor rectifier device. 3,718,850, Cl. 321-8.00c.

K-D Manufacturing Company: *See—*
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Kabushiki Kaisha Hattori Tokeiten: *See—*
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Kabushiki Kaisha Ricoh: *See—*
Suzuki, Shigeru; Kanno, Tadaaki; and Sakamaki, Tadatoshi, 3,718,155.

Kabushiki Kaisha Sankyo Seiki Seisakusho: *See—*
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Kabushiki Kaisha Suwa Seikosha: *See—*
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Kabushiki Kaisha Yamamoto Kogyosho: *See—*
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Kabushikikaisha Yokogawa Denki Seisakusho: *See—*
Nakagawa, Mutsuaki; Tauchi, Takao; and Nishihara, Tadashi, 3,718,047.

Kader, Reiner: *See—*
Holzmann, Rainer; Kader, Reiner; and Thomas, Alfred, 3,718,724.

Kaiser, Carl; and Ross, Stephen T., to Smith Kline & French Laboratories. Pharmaceutical compositions comprising an a-aminoalkyl-4-hydroxy-3-carboalkoxyaminobenzyl alcohol. 3,718,744, Cl. 924-300.000.

Kali-Chemie Aktiengesellschaft: *See—*
Zeugner, Horst; Eickstedt, Klaus-Wolf Von; Stuhmer, Werner; and Funke, Siegfried, 3,718,666.

Kalina, Vladimir, to Societe d'Assistance Technique pour Produits Nestle S.A. Isolation of proteins. 3,718,541, Cl. 195-28.00r.

Kalman, Gabor U. Distance compensated reflectance sensor. 3,718,399, Cl. 356-210.000.

Kalski, Bernd: *See—*
Harrison, Henry, 3,718,259.

Kanno, Tadaaki: *See—*
Suzuki, Shigeru; Kanno, Tadaaki; and Sakamaki, Tadatoshi, 3,718,155.

Kanno, Tomoei; and Kobayashi, Harunobu, to Showa Sangyo Kabushiki Kaisha. Method for manufacture of processed foods from soybeans. 3,718,479, Cl. 99-17.000.

Kano, Kenichi: *See—*
Katsuta, Takashi; Kano, Kenichi; Kawasaki, Mitsuru; and Ushiyama, Yasuichi, 3,718,752.

Kanter Jerome J. Process for protecting ferrous base metals against corrosion, and articles produced thereby. 3,718,499, Cl. 117-127.000.

Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, to Merck & Co., Inc. Diastereomers of α-hydroazino-b-(phenyl) propionitriles. 3,718,674, Cl. 260-397.100.

Karll, Robert E.: *See—*
Piasek, Edmund J.; Karll, Robert E.; and Lee, Richard J., 3,718,663.

Kataoka, Kouju: *See—*
Nezu, Kazuo; Imabayashi, Ziro; Watanabe, Kazutaka; Iritani, Tadamitsu; Kataoka, Kouju; and Yoshioka, Michio, 3,718,762.

Kato, Masaaki: *See—*
Sugiyama, Michiyuki; Takatori, Yoshikuni; Touyama, Ryosuke; Nakamura, Akira; Yamauchi, Teiji; Kato, Masaaki; and Nakashiba, Yoshio, 3,718,560.

Katoh, Takashi: *See—*
Oishi, Kazuo; Kurebayashi, Tokuhiro; Ando, Noriyoshi; Yamamoto, Noboru; Toda, Tadahide; Nohira, Hidetaka; and Katoh, Takashi, 3,718,126.

Katsuta, Takashi; Kano, Kenichi; Kawasaki, Mitsuru; and Ushiyama, Yasuichi. Color television camera. 3,718,752, Cl. 178-5.4tc.

Katsuyama, Takehiro: *See—*
Kawai, Atsushi; Katsuyama, Takehiro; Suzuki, Migaku; and Ohta, Hidenori, 3,718,537.

Kauhl, Gunther: *See—*
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Kautex-Werk Reinold Hagen: *See—*
Holzmann, Rainer; Kader, Reiner; and Thomas, Alfred, 3,718,724.

Kautz, Wilbert C.: *See—*
Brandenberg, Karl; and Kautz, Wilbert C., 3,718,409.

Kawai, Atsushi; Katsuyama, Takehiro; Suzuki, Migaku; and Ohta, Hidenori, to Mitsubishi Rayon Company, Ltd. Non woven fibrous product and method for producing same. 3,718,537, Cl. 162-157.00c.

Kawamoto, Kinji, to Matsushita Electric Industrial Co., Ltd. Phase modulating device. 3,718,871, Cl. 332-16.00t.

Kawasaki, Mitsuru: *See—*
Katsuta, Takashi; Kano, Kenichi; Kawasaki, Mitsuru; and Ushiyama, Yasuichi, 3,718,752.

Kayaku Antibiotic Research Company, Ltd.: *See—*
Koyama, Yasuo, 3,718,741.

Keatts, Albert B. Expanding lap arbor. 3,717,956, Cl. 51-1.000.

Kehoe, Lawrence J.; and Schell, Raymond A., to Ethyl Corporation. Preparation of carboxylic acids. 3,718,676, Cl. 260-413.000.

Kehr, William D.: *See—*
Bate, Geoffrey; Echelmeier, Robert H.; Everett, Larry H.; Kehr, William D.; Schaps, Joseph E.; Taylor, Gerald; and Thornley, Richard F. M., 3,718,776.

Keiter, Edward F.; Pfleiderer, Glenn F.; and Pettigrew, David D., to Rockwell Manufacturing Company. Drill press or the like variable speed drive. 3,718,405, Cl. 408-128.000.

Kelch, Heinz; and Spauszus, Siegfried, to Kienzle Apparate G.m.b.H. Apparatus for time-depending evaluation of a diagram carrier. 3,718,808, Cl. 235-92.00t.

Keller, Hans, to ITT Industries, Inc. Driving circuit for electromechanical oscillators. 3,718,870, Cl. 331-116.00m.

Kellermann, Walter Maria Eduard: *See—*
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Lohse, Friedrich; Schmid, Rolf; and Batzer, Hans, to Ciba-Geigy AG. Heat-curable polyurethane foams and elastomers based on aromatic polyesters. 3,718,623, Cl. 260-75.0np.
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Maloney, William T.; and Thaxter, James B., to Sperry Rand Corporation. Erasable optical recording system. 3,718,913, Cl. 340-173.0ch.

Mange, Franklin E.: *See—*
Bellos, Thomas J.; and Mange, Franklin E., 3,718,588.

Mann, Charles N.: *See—*
Lysons, Hilton H.; and Mann, Charles N., 3,718,262.

Mann, Frederick W. Adjustable swing hitch for vehicles. 3,718,347, Cl. 280-467.000.

Mannings, Inc.: *See—*
Brunner, Fred William, 3,718,487.

Mantooth, Charles P. Seat lifter. 3,717,884, Cl. 4-237.000.

Manz, August Frederick, to Union Carbide Corporation. Ripple control for electric arc welding power supply apparatus. 3,718,802, Cl. 219-131.0wr.

Mapel, William S.: *See—*
Mallory, Edwin E.; and Mapel, William S., 3,718,523.

Marathon Oil Company: *See—*
Holovka, John M.; and Hurley, Edward, Jr., 3,718,701.
Milton, Harry W., Jr., 3,718,187.

Marcotte, Eugene M., to West Coast Rope and Rigging of Portland, Inc. Beam end cap. 3,718,361, Cl. 294-67.00e.

Mark Products, Inc.: *See—*
Holmes, Robert C., Jr., 3,718,900.

Marks, John L., to International Telephone and Telegraph Corporation. Apparatus for cutting a wire and crimping a winding to the wire. 3,717,917, Cl. 29-203.00d.

Marmon Group, Inc., The: *See—*
Doerr, Albert H., 3,718,035.

Marotto, Robert Anthony: *See—*
Tornoe, John Axel; and Marotto, Robert Anthony, 3,718,015.

Marten, James F.: *See—*
Perry, Wesley G.; and Marten, James F., 3,718,133.

Marten, John Anthony; and Gee, Bernard Arthur, to Suntester Limited. Vehicle testing apparatus. 3,718,036, Cl. 73-117.000.

Martin, Daniel W.; and Stein, John L., to Baldwin, D. H., Company. Electrocoustic pipes for electronic organs. 3,718,747, Cl. 84-1.010.

Martin, Donald N.: *See—*
Krull, Irwin H.; and Martin, Donald N., 3,718,563.

Martin, George Robert, to Dow Chemical Company, The. Catalyst for dehydrogenation of alkanes. 3,718,607, Cl. 252-439.000.

Martinsons, Aleksandrs, to PPG Industries, Inc. Ruthenium coated titanium electrode. 3,718,551, Cl. 204-98.000.

Martone, Ronald J.; Mueller, Peter G.; and Bailey, Homer M., to Picker Corporation. Scintillation camera system. 3,718,833, Cl. 315-18.000.

Marvel Industries, Inc.: *See—*
Lund, Harold E.; and Ericson, John F. E., 3,718,228.

Marx, Louis, & Co.: *See—*
Lohr, Raymond J.; and Cook, Calvin S., 3,718,344.

Mason, Daniel W.; and Nester, Henry H.; deceased (by Nester, Dianne L.; as special administratrix), said Mason, Daniel W., assors. to Owens-Illinois, Inc. Resistor compositions for microcircuitry. 3,718,608, Cl. 252-514.000.

Masuda, Noboru; and Kobayashi, Tunekazu, to Denki Onkyo Co., Ltd. Magnetic switching apparatus. 3,718,882, Cl. 338-32.00h.

Matsubara, Masaki, to Olympus Optical Company Limited. Accurate lens system for producing an extremely small image in a reduced scale. 3,718,384, Cl. 350-215.000.

Matsui, Kazuma; and Tsubouchi, Hideo, to Nippondenso Kabushiki Kaisha. Gas controlled liquid proportioning fluidic device. 3,718,151, Cl. 137-823.000.

Matsuoka, Hideo, to Iwatsu Electric Co., Ltd. Sweep circuit exhibiting eliminated jitter. 3,718,825, Cl. 307-228.000.

Matsushima, Akira, to Kabushiki Kaisha Hattori Tokeiten. Switch for push key. 3,718,877, Cl. 335-205.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Kawamoto, Kinji, 3,718,871.
Kosaka, Masahiro, 3,718,774.
Nagaoka, Yoshitomi; and Saishima, Takayuki, 3,718,753.
Yoshida, Hideyuki, 3,718,801.

Matsushita Electronics Corporation: *See—*
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Matsuyama, George: *See—*
Petersen, Arne J.; and Matsuyama, George, 3,718,569.

Matthews, Robert E.: *See—*
Freedlander, Abraham L.; Garrett, Wayne C.; and Matthews, Robert E., 3,717,985.

Matthews, Russell B. Automatic fuel ignition system. 3,718,423, Cl. 431-266.000.

Matzner, Markus; Reichle, Walter T.; Chow, Sui-Wu; and McGrath, James E., to Union Carbide Corporation. Disulfonamides of diamino diphenyl sulfones. 3,718,672, Cl. 260-397.600.

Maurer, Richard Launt: *See—*
Tremblay, Maurice Robert; and Maurer, Richard Launt, 3,718,480.

Mauvernay, Roland Yves; Busch, Norbert; Moleyre, Jacques; and Simond, Jacques, to Societe Anonyme Centre Europeen de Recherches Mauvernay. Derivatives of substituted piperazines. 3,718,650, Cl. 260-268.00r.

Maxey, Edwin M.; and Harrington, John T., to General Tire & Rubber Company, The. Urethane foams containing halogen containing polymers and methods for preparing the same using certain catalysts. 3,718,611, Cl. 260-2.5ae.

Mazza, Lamberto, to Industrie A. Zanussi S.p.A. Dish-washer. 3,718,149, Cl. 134-57.00d.

Mazzarins, Janis, to General Motors Corporation. Suspension system for crawler tractor. 3,718,199, Cl. 180-9.20r.

Mc Dermott, Richard L., to Airco, Inc. Reactivated low temperature adsorber system with a non-adsorbing cold accumulator. 3,718,005, Cl. 62-13.000.

Mc Donough, Thomas B.; and Shaffer, John W., to GTE Sylvania Incorporated. Photographic flashlamp unit with flashed lamp indicator and method of making same. 3,718,815, Cl. 240-1.300.

McCain, James H.; and Theiling, Louis F., to Union Carbide Corporation. Preparation of trisubstituted-hydroxyalkyl alkanoates. 3,718,689, Cl. 260-494.000.

McCain Manufacturing Corporation: *See—*
Bellanca, Joseph V., 3,718,348.

McClain, Lamont R.; and Slavik, Emil L., to Engel Industries, Inc. Combined slitting and overlaying feed apparatus for roll former machines and the like. 3,718,022, Cl. 72-132.000.

McCormick, Harold E., to Ramsey Corporation. Pumping seal for rotary piston engines. 3,718,412, Cl. 418-142.000.

McCullough, Lester E.; and Ladine, Duane A., to Goldak Company, Inc., The. Boring bit locator. 3,718,930, Cl. 343-112.00r.

McFarland, Frederick R.; and Diffenderfer, Walter L., to K-D Manufacturing Company. Battery terminal post and post clamp cleaner tool. 3,717,895, Cl. 15-105.000.

McGrath, James E.: *See—*
Matzner, Markus; Reichle, Walter T.; Chow, Sui-Wu; and McGrath, James E., 3,718,672.

McGraw-Edison Company: *See—*
Bufkin, Dale E.; and Murphy, Willard G., 3,718,084.

McGuire, John V.; and Watson, Donald W., to Xerox Corporation. Label transfer wheel. 3,718,525, Cl. 156-539.000.

McGusty, Elizabeth R.; and Sutton, Blaine M., to Smith Kline & French Laboratories. Phosphine or phosphite gold complexes of thiomalic acid. 3,718,679, Cl. 260-430.000.

McGusty, Elizabeth R.; and Sutton, Blaine M., to Smith Kline & French Laboratories. Phosphine or phosphite gold complexes of thioethanol and derivatives thereof. 3,718,680, Cl. 260-430.000.

McJones, Robert W. Pressure gauge isolator. 3,718,046, Cl. 73-395.000.

McKee, John A.: *See—*
Joo, Louis A.; McKee, John A.; and Shea, Frederick L., 3,718,493.

McKee, Kenneth R. Apparatus for starting rope-pull engines. 3,718,129, Cl. 123-179.00p.

McMechan, Maurice H. Orchard heating system. 3,718,421, Cl. 431-23.000.

Mead Corporation, The: *See—*
Taylor, Richard P.; Van Brimmer, Russell H.; and Culp, Fred E., 3,717,945.

Medical Specialties, Inc.: *See—*
Gaylord, John F., Jr., 3,718,137.

Medtronic, Inc.: *See—*
Mulier, Pieter M.J., 3,718,142.

Medtronic, Inc., mesne: *See—*
Greatbatch, Wilson, 3,718,909.

Megarsky, Valery Vasilievich: *See—*
Afanasiev, Vadim Nikolaevich; Belyaev, Jury Pavlovich; Gaiduchik, Vladimir Olegovich; Gruzin, Pavel Lukich; Konkin, Nikolai Alexandrovich; Megarsky, Valery Vasilievich; Okunev, Boris Nikolaevich; and Trokin, Jury Alexandrovich, 3,718,817.

Meier, Johann. Inclinometer or oscillation measuring device. 3,717,935, Cl. 33-391.000.

Meiners, Elmo R., to M&W Gear Company, Inc. Corn detasseler head. 3,717,982, Cl. 56-63.000.

Meis, Thomas F. Cant-producing saw mills. 3,718,063, Cl. 84-471.200.

Meissner, Konrad Emil, to Filper Corporation. Method of palletizing cans. 3,718,223, Cl. 214-152.000.

Melancon, John D.: *See—*
Rollo, William C.; and Melancon, John D., 3,718,586.

Menelly, Richard A.: *See—*
Butter, Donald A.; Kern, Edmund R.; and Menelly, Richard A., 3,718,831.

Merck & Co., Inc.: *See—*
Gitterman, Charles O.; Madas, John; Rickes, Edward L.; and Stoudt, Thomas H., 3,718,651.
Hinkley, David F., 3,718,482.
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,718,674.
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Merrick Scale Mfg. Company: *See—*
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Mesler, Lilburn L.: *See—*
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Met-L-Wood Corporation: *See—*
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Metaframe Corporation: *See—*
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Microwave Associates, Inc.: *See—*
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Mount, Robert E.; De Gelleke, Gerrit; and Pundyk, Joseph, 3,718,303.

Mihailovski, Alexander, to Stauffer Chemical Company. Herbicidal method employing 4-chloro-1-naphthyl 2'-propynyl ether. 3,718,456, Cl. 71-124.000.

Miksitz, Frank J. Feeding and particle size measurement of comminuted solids. 3,718,819, Cl. 250-43.50d.

Milanowski, Floyd J.; and Bowman, Arthur J., Jr., to United States of America, Army. Firing pin assembly. 3,718,093, Cl. 102-73.00a.

Miller, Howard A., to Eastman Kodak Company. Method of preparing magnetically responsive carrier particles. 3,718,594, Cl. 252-62.100.

Miller, Paul: *See—*
Erdman, William Charles; and Miller, Paul, 3,718,514.

Miller, Robert E.: *See—*
Wildi, Bernard S.; and Miller, Robert E., 3,718,478.

Miller, Stanley M., to Ingersoll-Rand Company. Trigger mechanism. 3,718,313, Cl. 251-290.000.

Miller, William Don. Elastic post bracing assembly. 3,718,098, Cl. 105-369.

Mills, Franky D., to Hamby Company, The. Ammonia trailer improvements. 3,718,343, Cl. 280-116.000.

Milton, Harry W., Jr., to Marathon Oil Company. Method of injection well stimulation. 3,718,187, Cl. 166-274.000.

Milwaukee Gear Company: *See—*
Barr, William A.; Hahlbeck, Edwin C.; and Heine, Ferdinand L., 3,718,052.

Mimeur, Robert, to Carpano, Ets. & Pons S.A. Device for limiting the number of revolution of a rotating shaft. 3,718,215, Cl. 192-141.000.

Mimura, Koji: *See—*
Joh, Yasushi; and Mimura, Koji, 3,718,716.

Minnesota Mining and Manufacturing Company: *See—*
Schertler, Paul H.; and Strobel, Rupert F., 3,718,113.
Tomita, Jun, 3,718,495.
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Minshull, Robert: *See—*
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Mirroless Watson Company Limited: *See—*
Bach, Niels Breinholt, 3,718,257.

Mishima Kosan Co., Ltd.: *See—*
Takeuchi, Shinjiro, 3,718,872.

Mitchell, John Z., to Oven Systems, Inc. Shrink film oven. 3,717,939, Cl. 34-230.000.

Mitchell, Robert S., to Monsanto Company. Methods of inhibiting corrosion with substituted tertiary amine phosphonates. 3,718,603, Cl. 252-389.00h.

Mitsubishi Rayon Company Limited: *See—*
Joh, Yasushi; and Mimura, Koji, 3,718,716.

Mitsubishi Rayon Company, Ltd.: *See—*
Kawai, Atsushi; Katsuyama, Takehiro; Suzuki, Migaku; and Ohta, Hidenori, 3,718,537.

Mitsui Petrochemical Industries, Ltd.: *See—*
Tomoshige, Toru; and Honma, Shiro, 3,718,635.

Mitsui Shipbuilding and Engineering Co., Ltd.: *See—*
Ozawa, Tokuji; Uyeda, Mikio; and Suzuki, Shigenori, 3,718,708.

Mix-Mill, Inc.: *See—*
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Miyata Industry Co., Ltd.: *See—*
Nomura, Hideo, 3,717,947.

Mizzoni, Renat Herbert; and Blatter, Herbert Morton, to Ciba-Geigy Corporation. Anilino-3-pyridinesulfonic acids. 3,718,654, Cl. 260-294.80r.

Mobil Oil Corporation: *See—*
Chen, Nai Yuen; and Yan, Tsoung-Yuan, 3,718,577.
Clayton, William J., 3,718,059.
Groenendyke, Goethe M., 3,718,204.
Stover, William A., 3,718,553.

Modern Animal Care, Inc.: *See—*
Schwarz, Karl W.; Borkowski, Allan S.; and Hafesh, Joseph W., 3,718,120.

Moffett, Robert B., to Upjohn Company, The. N-lower alkenyl-2,3-dihydro-2-oxo-5-phenyl-1H-1, 4-benzodiazepine-1-carboxamides. 3,718,646, Cl. 260-239.30d.

Mohawk Industrial Laboratories, Inc.: *See—*
Lanahan, John H.; and Abraham, William W., 3,718,255.

Moleyre, Jacques: *See—*
Mauvernay, Roland Yves; Busch, Norbert; Moleyre, Jacques; and Simond, Jacques, 3,718,650.

Molins Machine Company Limited: *See—*
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Monsanto Company: *See—*
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Buckley, Francis T.; Riek, Raymond F.; and Christensen, Donald I., 3,718,516.
Clark, Frank S., 3,718,590.
Mitchell, Robert S., 3,718,603.
Richard, William R., Jr., 3,718,596.
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Stenzel, Hans-Jurgen A., 3,718,459.
Wildi, Bernard S.; and Miller, Robert E., 3,718,478.
Young, Raymond H., Jr., 3,718,463.

Montgomery, Donald Lee. Method of making flat rotatable disc assemblies. 3,718,519, Cl. 156-250.000.

Moody, Harry A.: *See—*
Dunham, Russell H.; Moody, Harry A.; and Skahen, Don H., 3,718,339.

Moog Inc.: *See—*
Dark, Patrick M., 3,718,016.

Mookherjee, Braja D.; and Theimer, Ernst T., to International Flavors & Fragrances, Inc. Process for the preparation of macrocyclic compounds and novel compounds produced thereby. 3,718,696, Cl. 260-586.00a.

Moore, Alvin Edward. Barrel-curved, wreck-resistant cabin. 3,718,295, Cl. 244-119.000.

Moore, George E.; and Horlacher, Joseph D., to Watson Manufacturing Company, Inc. File tray control plate system. 3,718,232, Cl. 220-22.300.

Moore, Lee C., Corporation: *See—*
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Moore, Robert S., to Eastman Kodak Company. Plastic optical element having refractive index gradient. 3,718,383, Cl. 350-175.0gn.

Mora, Raul L.: *See—*
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Morden, Russell L.: *See—*
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Morgan Construction Company: *See—*
Gilvar, Martin, 3,718,062.
Vitelli, Vito J., 3,718,024.

Morgan, Cyril Alfred; Arber, Scott Gordin; and Young, Oswald William John, to United States Borax & Chemical Corporation. Process for purification of refractory metal nitrides. 3,718,490, Cl. 106-65.000.

Morlock, Douglas A.: *See—*
Kwast, Victor B.; Morlock, Douglas A.; and Satz, Richard G., 3,718,860.

Morrison, Bobby: *See—*
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Morrison Molded Fiber Glass Company, mesne: *See—*
Goodman, James L., 3,718,527.

Mortell, Charles H. Method and apparatus for electrolytically recovering metals. 3,718,552, Cl. 204-105.00r.

Morton, Evans T.: *See—*
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Morton, Evans T.; and Vescio, Kimbel L., to Behring Corporation. Roof sealing of modules. 3,717,965, Cl. 52-79.000.

Morton, Robert B., to Bell & Howell Company. Filmstrip cartridge. 3,718,301, Cl. 242-71.100.

Moser, Kurt; and Hochli, Beat, to Lonza Ltd. Torsional vibrator for testing plastics materials. 3,718,028, Cl. 73-15.400.

Mosher, Fred D., to Techno Corporation. Cardiac valve replacement. 3,717,883, Cl. 3-1.000.

Moslo, Ernest P. Lubricating mechanism. 3,718,209, Cl. 184-5.000.

Motiongraph, Inc.: *See—*
Bukowski, Raymond J.; Brija, Raymond L.; and Yanikoski, Florian F., 3,718,244.

Motorola, Inc.: *See—*
Lattin, William W., 3,718,915.
Rollins, Thomas J., 3,718,899.

Moulin, Michel, to Thomson-CSF. Process for epitaxially growing semiconductor crystals. 3,718,511, Cl. 148-171.000.

Moulinage et Retorderie de Chavanoz: *See—*
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Mount Hope Machine Company, Incorporated: *See—*
Robertson, J. Douglas, 3,717,909.

Mount, Robert E.; De Geleke, Gerrit; and Pundyk, Joseph, to Midland-Ross Corporation. Coil and mandrel separating machinery. 3,718,302, Cl. 242-81.000.

Mount, Robert E.; De Gelleke, Gerrit; and Pundyk, Joseph, to Midland-Ross Corporation. Turnstile-type coil-gathering machine. 3,718,303, Cl. 242-81.000.

Mowat, Geoffrey C. Guiding devices. 3,718,896, Cl. 340-1.00r.

MTS Systems Corporation: *See—*
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Mueller, Peter G.: *See—*
Martone, Ronald J.; Mueller, Peter G.; and Bailey, Homer M., 3,718,833.

Muirhead, Leslie A., to Shell Oil Company. High impact polyvinyl-aromatic compositions. 3,718,616, Cl. 260-28.50b.

Mulier, Pieter M.J., to Medtronic, Inc. Electrically shielded, gas-permeable implantable electro-medical apparatus. 3,718,142, Cl. 128-419.00p.

Muller, Donald C., to Webb, Jervis B., Company. Accumulation roller conveyor. 3,718,248, Cl. 198-127.000.

Muller, Karl-Heinz, to Siemens Aktiengesellschaft. Data storage system utilizing particle beam for reading information. 3,718,914, Cl. 340-173.0cr.

Muller, Rolf; Von Brachel, Hanswilli; Klein, Rudolf; Schmidt, Ewald; and Bender, Heinz, to Cassella Farbwerke Mainkur AG. Reactive arylazo-pyrazalone dyestuffs. 3,718,641, Cl. 260-162.000.

Mulvey, Dennis M.: *See—*
Weinstock, Leonard M.; Tull, Roger J.; and Mulvey, Dennis M., 3,718,647.

Munger, John R.; and Tate, Sherman E., to United States of America, Army. Burn out perforation for rocket propellants. 3,718,095, Cl. 102-102.000.

Murphy, Willard G.: *See—*
Bufkin, Dale E.; and Murphy, Willard G., 3,718,084.

Murray, I. Gillis, to Brewster Corporation, The. Supporting feet for panels and the like. 3,718,306, Cl. 248-188.800.

Mutschler, William E.: *See—*
Fishman, Jack B.; and Mutschler, William E., 3,718,043.

Myer, Jon H., to Hughes Aircraft Company. Omnidirectional planar optical code reader. 3,718,761, Cl. 178-7.600.

Myers, Paul K., to Cardinal-Ordinal Corporation. Cardinal-ordinal digital calculators and computers. 3,718,810, Cl. 235-156.000.

Myers, Robert E. Dental floss holder. 3,718,146, Cl. 132-92.000.

Nagaoka, Yoshitomi; and Saishima, Takayuki, to Matsushita Electric Industrial Co., Ltd. Tint-control indicating apparatus for color TV receivers. 3,718,753, Cl. 178-5.4he.

Nagatsu, Yoshio: *See—*
Okamoto, Toshihiko; Hirobe, Masaaki; Suzue, Seigo; Nagatsu, Yoshio; Ushiyama, Keiichi; Satoh, Susumu; and Irikura, Tsutomu, 3,718,656.

Naggert, Dietrich K., to Continental Can Company, Inc. Machine for positioning a flexible container for seaming. 3,717,971, Cl. 53-89.000.

Nakagawa, Mutsuaki; Tauchi, Takao; and Nishihara, Tadashi, to Kabushikikaisha Yokogawa Denki Seisakusho. Force-to-signal converter. 3,718,047, Cl. 73-398.00r.

Nakagawa, Shiro; and Ishikawa, Mutsuo, to T.D.K. Electronics Corporation. Driving system of magnetic thin film memory. 3,718,917, Cl. 340-174.0tf.

Nakamura, Akira: *See—*
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Nakanishi, Koji; and Gylys, Jonas A., said Gylys assor. to Bristol-Myers Company. Method of sedation. 3,718,745, Cl. 424-311.000.

Nakashiba, Yoshio: *See—*
Sugiyama, Michiyuki; Takatori, Yoshikuni; Touyama, Ryosuke; Nakamura, Akira; Yamauchi, Teiji; Kato, Masaaki; and Nakashiba, Yoshio, 3,718,560.

Nakatani, Yoshio: *See—*
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Narayanan, Venkatachala L.; and Haugwitz, Rudiger D., to Squibb, E. R., & Sons, Inc. Mercaptobenzimidazolyl ureas and thioureas. 3,718,662, Cl. 260-309.200.

Nash, James H., Jr.: *See—*
Premru, Brian Allan; and Nash, James H., Jr., 3,718,832.

National Blank Book Company, Inc.: *See—*
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National Research Development Corporation: *See—*
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National-Standard Company: *See—*
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Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid, Handel en Verkeer: *See—*
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Negre, Robert Numa Paul, to Societe des Fonderies de Pont-A-Mousson. Sealing means for a machine for centrifugally casting pipes. 3,718,178, Cl. 164-297.000.

Nelson, Jerome W.: *See—*
Randolph, James B.; Nelson, Jerome W.; Paysinger, Joe R.; and Crump, E. Eugene, 3,718,798.

Nester, Dianne L.: *See—*
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Nester, Henry H.: *See—*
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New Hermes Engraving Corporation: *See—*
Berlant, George, 3,718,072.

Newbrough, Joseph S. Multi-stage gas lift fluid pump system. 3,718,407, Cl. 417-108.000.

Newelt, Robert T., to Instrumentation Laboratory, Inc. Electrochemical sensor instrumentation. 3,718,568, Cl. 204-195.00p.

Newman, Albert K., to Textron, Inc. Centrifugal clutch. 3,718,214, Cl. 192-105.0cd.

Newman, John W.: *See—*
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Nezu, Kazuo; Imabayashi, Ziro; Watanabe, Kazutaka; Iritani, Tadamitsu; Kataoka, Kouju; and Yoshioka, Michio, to Yokogawa Electric Works, Ltd. Pulse transmitting apparatus. 3,718,762, Cl. 178-68.000.

Nicely, Thomas E.: *See—*
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Nicholson Manufacturing Company: *See—*
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Niedecker, Herbert. Apparatus for closing open-topped flexible containers. 3,717,972, Cl. 53-13.80a.
Nield, Eric: *See—*
Hart, Charles Richard; Nield, Eric; and Rose, John Brewster, 3,718,620.
Nies, Nelson P.: *See—*
Woods, William G.; Whiten, Joseph G.; and Nies, Nelson P., 3,718,615.
Niikura, Isamu; and Aritz, Yokohama, to Tokyo Shibaura Electric Co., Ltd. Optical detectors for inspecting the condition of samples. 3,718,823, Cl. 250-223.00r.
Nippon Electric Company, Limited: *See—*
Takahashi, Sadayuki; and Tsubouchi, Norio, 3,718,595.
Wada, Toshio; and Tsujide, Tohru, 3,718,916.
Nippon Kogaku K.K.: *See—*
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Nippon Sheet Glass Co.: *See—*
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Oishi, Kazuo; Kurebayashi, Tokuhiro; Ando, Noriyoshi; Yamamoto, Noboru; Toda, Tadahide; Nohira, Hidetaka; and Katoh, Takashi, 3,718,126.
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Nolan, Roger William; and Wright, Maurice James, to Lucas, Joseph, (Industries) Limited. Voltage regulators for use in battery charging systems. 3,718,849, Cl. 320-61.000.
Nolte, Calude B., to Kingmann-White, Inc. Relief valves for differential pressure flow meters. 3,718,048, Cl. 73-407.00r.
Nomura, Hideo, to Miyata Industry Co., Ltd. Fishing device. 3,717,947, Cl. 43-19.000.
Nordhoff, John J., to Magnetico International, Inc. Beer dispensing system. 3,718,233, Cl. 222-70.000.
Norman, Oscar L.: *See—*
Bushick, Ronald D.; Norman, Oscar L.; and Spinelli, Harry J., 3,718,690.
Norman, William A., Jr. Retainer for draft key of railway car like coupling. 3,718,264, Cl. 213-50.500.
Norris, Elwood G., to Sound Systems International, Inc. Wireless microphone and adapter kit. 3,718,862, Cl. 325-111.000.
North American Aviation, Inc.: *See—*
Bermender, Norman W., 3,718,094.
North American Car Corporation: *See—*
Dupre, Barry E., 3,718,363.
North American Philips Co., Inc.: *See—*
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Northcutt, Oren Van, to Dal-Air Tool Company. Ball joint air supply connection. 3,718,352, Cl. 285-261.000.
Nucleonics Development Company: *See—*
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Nunez, Hector R. Portable vice. 3,718,327, Cl. 269-37.000.
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Nyquist, Edwin B., to Dow Chemical Company, The. Coated articles. 3,718,500, Cl. 117-132.00r.
Nystrom, Donald L. Repair clamp for spring. 3,718,325, Cl. 267-74.000.
O'Bryan, Henry Miles, Jr.: *See—*
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Obszarny, Theodore J., to Guardian Electric Manufacturing Company. High speed push button switch. 3,718,793, Cl. 200-160.000.
Oce-Van der Grinten N.V.: *See—*
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Ochiai, Takeshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Skid control system for automotive vehicles. 3,718,374, Cl. 303-21.00a.
O'Connor, Liam, to O'Connor, Liam, and Company Limited. Closure assembly for a bulk container. 3,718,231, Cl. 220-41.000.
O'Connor, Liam, and Company Limited: *See—*
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Ogiso, Mitsutoshi; and Ito, Tadashi, to Canon Kabushiki Kaisha. Exposure controlling device for a camera. 3,718,075, Cl. 95-10.0ct.
Ohi, Reiichi: *See—*
Hatano, Tadao; Hara, Hikoharu; Sugiyama, Masatoshi; and Ohi, Reiichi, 3,718,469.
Ohsato, Nobuyoshi; and Akashi, Naotomo, to Nippon Sheet Glass Co. Float process for manufacture of glass ribbon. 3,718,450, Cl. 65-99.00a.
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Oishi, Kazuo; Kurebayashi, Tokuhiro; Ando, Noriyoshi; Yamamoto, Noboru; Toda, Tadahide; Nohira, Hidetaka; and Katoh, Takashi, to Toyota Jidosha Kogyo Kabushiki Kaisha and Nippondenso Kabushiki Kaisha. Ignition timing regulating device for internal combustin engines. 3,718,126, Cl. 123-117.00r.
Oiso, Mitsuo; and Endo, Yasuo, to Fujitsu Limited. Circuit arrangement for checking stored information. 3,718,903, Cl. 340-146.1al.
Oka, Kazumichi: *See—*
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Okamoto, Miyoshi; and Watanabe, Koji, to Toray Industries, Inc. Spontaneously crimping synthetic composite filament and process of manufacturing the same. 3,718,534, Cl. 161-173.000.
Okamoto, Toshihiko; Hirobe, Masaaki; Suzue, Seigo; Nagatsu, Yoshio; Ushiyama, Keiichi; Satoh, Susumu; and Irikura, Tsutomu, to Kyorin Seiyaku Kabushiki Kaisha. Pyrazolo (1,5-a) pyridine derivatives. 3,718,656, Cl. 260-295.00f.
O'Kane, Daniel F.: *See—*
Gulitz, Louis; Kwap, Theodore W.; and O'Kane, Daniel F., 3,718,757.
Okuda, Tomoharu; and Awataguchi, Shigemi, to Tanabe Seiyaku Co., Ltd. Antibiotics yl 704 and preparation thereof. 3,718,742, Cl. 424-121.000.
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Afanasiev, Vadim Nikolaevich; Belyaev, Jury Pavlovich; Gaiduchik, Vladimir Olegovich; Gruzin, Pavel Lukich; Konkin, Nikolai Alexandrovich; Megarsky, Valery Vasilievich; Okunev, Boris Nikolaevich; and Trokin, Jury Alexandrovich, 3,718,817.
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Oliver, John P.; and Wedel, Alfred W., to Cameron Iron Works, Inc. Apparatus for making an underwater pipeline connection. 3,717,920, Cl. 29-237.000.
Oliver, John P.; Wedel, Alfred W.; and Priesmeyer, Paul T. Method for making an underwater pipeline connection. 3,718,004, Cl. 61-72.300.
Olsen, Leslie R., to United States of America, Navy. Method of making a cool burning gun propellant. 3,718,719, Cl. 264-3.00b.
Olsen, Robert W.; and Herrick, Richard E., to Construction Specialties, Inc. Surface-mounted wall guards. 3,717,968, Cl. 52-288.000.
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Olympus Optical Company Limited: *See—*
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Yonekubo, Ken, 3,718,400.
Omdoll, James W., Jr. Gaff hook. 3,718,359, Cl. 294-26.000.
Onal, Hasan F., to Borg-Warner Corporation. Centrifugal pump with integral seal pressure balance. 3,718,406, Cl. 415-111.000.
Ono, Shigeo, to Nippon Kogaku K.K. Transistorized control device for camera shutters including exposure setting and shutter delay timing means. 3,718,077, Cl. 95-10.0ct.
Orndorff, Roy L., to Goodrich, B. F., Company, The. Mud resistant elastomers. 3,717,943, Cl. 36-32.00r.
Orthman, Henry K., to Orthman Manufacturing Inc. Seedbed splitter and shaper. 3,718,103, Cl. 172-159.000.
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Osborne, Edwin F., Jr. Air filter system. 3,717,978, Cl. 55-242.000.
Osgood, John H., to Harris-Intertype Corporation. Roll out stand. 3,718,299, Cl. 242-58.600.
Outboard Marine Corporation: *See—*
Blanchard, Clarence E., 3,718,110.
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Oy Nokia Ab Finnish Cable Works: *See—*
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Oya, Yuichiro; and Hayasaka, Akio, to Hitachi, Ltd. Active pulse transmission circuit for an integrated circuit. 3,718,780, Cl. 179-170.00g.
Ozawa, Tokuji; Uyeda, Mikio; and Suzuki, Shigenori, to Mitsui Shipbuilding and Engineering Co., Ltd. Method and apparatus for thermal cracking and quenching. 3,718,708, Cl. 260-683.00r.
Packaging Products & Design Corporation: *See—*
Smith, Jesse J., 3,718,253.
Pagano, Anthony M.; and Fiedler, Dolores E. Breast support. 3,718,143, Cl. 128-499.000.
Page, Geoffrey A.: *See—*

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Paine, Joseph L.: *See—*
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Palitex Project Company GmbH: *See—*
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Paloniemi, Paavo. Isothermal calorimeter. 3,718,437, Cl. 23-253.00r.

Pande, Kailash C.; and Trampe, George M., to Borg-Warner Corporation. Method for synthesizing alpha-haloacrylonitrile acid. 3,718,684, Cl. 260-465.700.

Pao, Yoh-Han; and Knox, Joseph Dale, to Case Western Reserve University. I_2^{129} Inverted lamb dip stabilized He-Ne laser. 3,718,868, Cl. 331-94.500.

Papastavrou, Antonios. Pollution control apparatus. 3,717,980, Cl. 55-461.000.

Paris, Gerard Yvon: *See—*
Garmaise, David Lyon; Paris, Gerard Yvon; and Plotnikoff, Nicholas Peter, 3,718,657.

Parker, Carlyle V.; and Bishop, Walton B., to United States of America, Navy. Instantaneous sidelobe interrogation decode suppressor. 3,718,926, Cl. 343-6.8lc.

Parks, John H.: *See—*
Gates, Marvin A.; and Parks, John H., 3,718,127.

Parmeggiani, Paolo; Nicita, Domenico; and D'Alo, Bruno, to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa. Devices for picking-up, sucking and dragging textile filaments and yarns. 3,718,270, Cl. 226-97.000.

Pascoe, Larry B., to Rohr Industries, Inc. Rivet center detecting mechanism. 3,718,822, Cl. 250-210.000.

Passer, La Roy B., to USM Corporation. Hole plug fasteners. 3,718,068, Cl. 85-71.000.

Pasternak, John Paul, to Bell Telephone Laboratories, Incorporated. Universal connector for cable conductors. 3,718,888, Cl. 339-98.000.

Patels, Gottfried; and Beck, Erich, to Vockenhuber, Karl and Hauser, Raimund. System for reproducing motion pictures. 3,718,760, Cl. 178-7.200.

Patula, Edward J.; Somers, Robert R.; and Roberts, William L., to United States Steel Corporation. Method for increasing the heating rate in continuous annealing processes. 3,718,510, Cl. 148-14.000.

Paulet, Jean-Francois; and Endtinger, Fritz, to Swiss Aluminium Ltd. Process for the coloring of anodized layers on aluminum. 3,718,548, Cl. 204-35.00n.

Payne, Leroy C., to Standard Pneumatic Motor Company. Quick connect and disconnect valved coupling. 3,718,312, Cl. 251-149.400.

Paysinger, Joe R.: *See—*
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Pearsall, Gerald Robert, to Irvin Industries, Inc. Vehicle seat belt alarm and starter interlock control system. 3,718,902, Cl. 340-52.00e.

Peatman, John B.: *See—*
Williams, Olin A., Jr.; and Peatman, John B., 3,718,813.

Pecker, Guillermo Eugene: *See—*
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Pedersen, Harry: *See—*
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Pelletier, Frank Palmer, to Bell Telephone Laboratories, Incorporated. Technique for the fabrication of discrete RC structure. 3,718,565, Cl. 204-192.000.

Penberthy, Walter L., Jr.: *See—*
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Penley, Walter E. Spare tire mount for pickups. 3,718,226, Cl. 214-451.000.

Penn, Harry S. Process of treating bile and novel iodine-131 complex. 3,718,737, Cl. 424-1.000.

Perina, Joseph, to American Velcro, Inc. Deformable fastening device. 3,717,908, Cl. 24-204.000.

Perina, Joseph, to American Velcro, Inc. Breakaway clutch. 3,718,009, Cl. 64-28.00r.

Peripheral Equipment Corporation: *See—*
Alaimo, Benjamin, 3,718,289.

Perkins, Ralph W.; and Morden, Russell L., to General Motors Corporation. Load responsive torque transmission mechanism. 3,718,054, Cl. 74-751.000.

Perlick, Allan A. Landscaping implement. 3,718,190, Cl. 172-173.000.

Perlman, Marvin: *See—*
United States of America, National Aeronautics and Space Administration, 3,718,863.

Perret, Georges, to Geneco Inc. Apparatus for printing on cylindrical articles. 3,718,085, Cl. 101-40.000.

Perrott, Emmanuel J.: *See—*
Ranghelli, Joseph C.; and Perrott, Emmanuel J., 3,718,935.

Perry, David Lester Edgar. Measuring machine. 3,718,112, Cl. 116-114.000.

Perry, Frederick G., to Texas Instruments, Incorporated. Apparatus for starting and protecting of electrical motors. 3,718,879, Cl. 337-95.000.

Perry, Wesley G.; and Marten, James F., to Damon Corporation. Container unit for liquid samples. 3,718,133, Cl. 128-2.00f.

Peschl, Ervin; and Skrepek, Jan, 1/2 to Schlafhorst, W., & Co. and 1/2 to Vyzkumny Ustav Pletarsky. Method of producing a warp knitted or sewn fabric. 3,718,011, Cl. 66-192.000.

Petersen, Arne J.; and Matsuyama, George, to Beckman Instruments, Inc. Method of making solid state glass electrode. 3,718,569, Cl. 204-195.00g.

Petersen, Niel R., to MTS Systems Corporation. Testing apparatus utilizing position-force cross coupling control. 3,718,033, Cl. 73-71.700.

Peterson, Leavitt A.: *See—*
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Petro-Tex Chemical Corporation: *See—*
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Petrolite Corporation: *See—*
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Pettigrew, David D.: *See—*
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Pfaff, Gary C.: *See—*
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Pfeifer, Josef; Ambraschka, Kasimir; Koopmann, Adolf; Hofmann, Wilfried; Dietrich, Karl-Heinz; and Rauffer, Walter, to Agfa-Gevaert Aktiengesellschaft. Microfilm reading apparatus. 3,718,391, Cl. 353-101.000.

Pfender, Georg, to Wehrle-Werk AG., Firma. Lapping machine for the production of reinforcement baskets with bell sleeve. 3,718,797, Cl. 210-56.000.

Pfiffner, Albert: *See—*
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,718,686.

Pfleiderer, Glenn F.: *See—*
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Pfleiderer, Wolfgang: *See—*
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Pharo, Wellington B.: *See—*
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Phelan, David P. Sleeping bag. 3,717,888, Cl. 5-343.000.

Philofsky, Harold M.; Ying, Sui-Chun; and Chottiner, Jacob, to Westinghouse Electric Corporation. Liquid cooled rotor for dynamoelectric machines. 3,718,830, Cl. 310-64.000.

Piasek, Edmund J.; Karll, Robert E.; and Lee, Richard J., to Standard Oil Company. Preparation of oil-soluble boron derivatives of an alkylene polyamine-urea or thiourea-succinic anhydride addition product. 3,718,663, Cl. 260-326.300.

Picker Corporation: *See—*
Martone, Ronald J.; Mueller, Peter G.; and Bailey, Homer M., 3,718,833.

Pierce, Russell W. Apparatus and method for detecting gaseous contaminants. 3,718,434, Cl. 23-232.00r.

Pilipovich, Donald: *See—*
Rogers, Howard H.; and Pilipovich, Donald, 3,718,557.

Pines, Seemon H.: *See—*
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,718,674.

Pit-Bar Manufacturing Company: *See—*
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Pitman, Robert L.; Haverson, Robert H.; Lyon, Jerry; Weldon, Peter; and Rand, Henry T., to United States of America, Army. Batteryless electronic time fuze. 3,718,092, Cl. 102-70.20r.

Pitts, Sam H., Jr., to United States of America, Atomic Energy Commission. Plutonium dissolution and plutonium alkoxide product. 3,718,677, Cl. 260-429.100.

Pizzerrato, Adrian, to Lee, Raymond, Organization, Inc., The. Drinking straws. 3,718,282, Cl. 239-33.000.

Plentovish, Jack: *See—*
Winslow, Charles E., Jr.; Plentovish, Jack; and Kise, Mearl A., 3,718,732.

Plomer, John J.; Doan, Hazen V.; and Slykhouse, Thomas E., to Dow Chemical Company, The. Mixer-molder. 3,718,069, Cl. 86-20.00d.

Plotnikoff, Nicholas Peter: *See—*
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Plough, Irving L., to Black Clawson Company, The. Chipping apparatus. 3,718,169, Cl. 144-242.00r.

Plumadore, Harold M.: *See—*
Boudouris, Angelo; and Plumadore, Harold M., 3,718,388.

Plummer, William T., to Polaroid Corporation. Smoothly granulated optical surface and method for making same. 3,718,078, Cl. 95-49.000.

Plumpe, Hans; and Puls, Walter, to Farbenfabriken Bayer Aktiengesellschaft. Arylsulphonyl ureas containing heterocyclic acylamino groups. 3,718,660, Cl. 260-307.00d.

Polaroid Corporation: *See—*
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Polkinghorn, Melvin W.: *See—*
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Pollman, Frederic W., to Sundstrand Corporation. Hydraulic motor. 3,718,411, Cl. 418-82.000.

Pollution Research & Control Corporation: *See—*

Sims, Anker V., 3,718,544.
Polytop Corporation: *See—*
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Ponghis, Nicolas Gerassimos; and Van Osmael, Claude Henri, to Centre National de Recherches Metallurgiques. Method and device for monitoring the working of a furnace. 3,718,758, Cl. 178-6.800.
Posey, Eldridge D. Heated fluid gun. 3,718,805, Cl. 219-305.000.
Posey, Thad W. Capacitor discharge ignition system. 3,718,125, Cl. 123-148.00e.
Potter, Paul H. Electric resistance heater with spaced insulators and an inter-connectable flexible metallic base strip. 3,718,806, Cl. 219-550.000.
Potter, Russell F., to General Motors Corporation. Preheater assembly for stirling engine. 3,717,993, Cl. 60-24.000.
PPG Industries, Inc.: *See—*
Crano, John C.; and Trenta, Gerald M., 3,718,711.
Drummond, Warren W.; and Denniston, Donald W., 3,718,448.
Fahey, Dennis M., 3,718,449.
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Prell, Gunter; and Baersch, Herbert, to Licentia Patent-Verwaltungs G.m.b.H. Apparatus for mounting an optical correction member in a housing. 3,718,385, Cl. 350-252.000.
Premru, Brian Allan; and Nash, James H., Jr., to Information Displays, Inc. Apparatus for producing ramp signals and an intensity control signal inresponse to digital data, particularly for a CRT vector generator. 3,718,832, Cl. 315-18.000.
Presby, Benedict F. Rotatable amusement and education device. 3,717,942, Cl. 35-77.000.
Pribyl, Edward J.: *See—*
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Priebel, Wolfgang; and Frobel, Arthur, to Olympia Werke AG. Sheet inserting apparatus for a typewriter. 3,718,245, Cl. 197-127.000.
Priesmeyer, Paul T.: *See—*
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Pringle, John; and Pecker, Guillermo Eugene, to Texas Instruments, Incorporated. Thermostatic device and means for mounting same. 3,718,880, Cl. 337-380.000.
Production Technology Inc., mesne: *See—*
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Prosser, Robert A. Protection against radiant heat energy. 3,718,592, Cl. 252-62.000.
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Pullman Incorporated: *See—*
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Quinlan, William J.; and Huver, Lawrence L., to Hastings Manufacturing Company. Windshield wiper assembly. 3,717,900, Cl. 15-250.360.
Quisenberry, Robert E., to Texaco, Inc. Hydrotreating and hydroisomerizing C_8 and C_9 hydrocarbon streams. 3,718,710, Cl. 260-683.670.
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Radovan, Joseph T. Tethered aerial top. 3,717,949, Cl. 46-61.000.
Ragsdale, Charles W., to United States of America, Army. Voltage-controlled one-shot. 3,718,827, Cl. 307-273.000.
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Rand, Henry T.: *See—*
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Randolph, James B.; Nelson, Jerome W.; Paysinger, Joe R.; and Crump, E. Eugene, to CRC-Crose International, Inc. Traveling selding apparatus. 3,718,798, Cl. 219-60.00a.
Randrup, Benjamin F. Method and apparatus for handling and cooling bottles. 3,718,007, Cl. 62-63.000.
Ranghelli, Joseph C.; and Perrott, Emmanuel J., to International Telephone and Telegraph Corporation. Dual circularly polarized phased array antenna. 3,718,935, Cl. 343-797.000.
Ranke, Gerhard; and Jungfer, Hans, to Linde Aktiengesellschaft. Process for selective absorption. 3,718,006, Cl. 62-17.000.
Rao, Durvasula V.; Ulrich, Henri; Stuber, Fred A.; and Sayigh, Adnan A. R., to Upjohn Company, The. N-stilbenylacrylamides. 3,718,692, Cl. 260-562.00a.
Rassmann, Christoph; Heyer, Willy; and Stuckmann, Dieter, to Gewerkschaft Eisenhutte Westfalia. Plough drive unit for longwall mining. 3,718,368, Cl. 299-34.000.
Rau, Gottfried; and Eck, Albert, to Eumuco Aktiengesellschaft fur Maschinenbau. Forming machine for heated materials, particularly metals. 3,718,027, Cl. 72-407.000.
Raue, Roderich: *See—*
Lehment, Klaus-Friedrich; and Raue, Roderich, 3,718,642.
Rauffer, Walter: *See—*
Pfeifer, Josef; Ambraschka, Kasimir; Koopmann, Adolf; Hofmann, Wilfried; Dietrich, Karl-Heinz; and Rauffer, Walter, 3,718,391.
Rauhut, Michael McKay, to American Cyanamid Company. Stabilization of oxalate ester solutions during storage. 3,718,599, Cl. 252-188.300.
Reed, Samuel F., Jr.: *See—*
Baldwin, Mart G.; and Reed, Samuel F., Jr., 3,718,633.
Reese, Randall Douglas, to Bell Telephone Laboratories, Incorporated. Key telephone system wideband conferencing arrangement. 3,718,770, Cl. 179-18.0bc.
Regal Manufacturing Company: *See—*
Verhellen, Norbert J. B., 3,718,050.
Reichert, Ernst, to Stump Bohr AG. Anchor tie construction and method of setting an anchor tie in the ground. 3,717,966, Cl. 52-127.000.
Reichle, Walter T.: *See—*
Matzner, Markus; Reichle, Walter T.; Chow, Sui-Wu; and McGrath, James E., 3,718,672.
Reifers, Richard F.; and Bixler, Kenneth D., to Diamond International Corporation. High strength open bottom packaging trays. 3,718,274, Cl. 229-2.500.
Reiffel, Leonard, to Telestrator Industries, Inc. Audio-visual teaching system and student response apparatus. 3,718,759, Cl. 178-6.800.
Reilly, John M.: *See—*
Abbott, Charles P., III; and Reilly, John M., 3,718,842.
Reilly, Thomas A.; Reitz, Charles F.; and Smith, Robert D., to Du Pont de Nemours, E. I., and Company. Plastic heat exchange apparatus. 3,718,181, Cl. 165-180.000.
Reilly, Thomas L.: *See—*
Conti, Donald J.; and Reilly, Thomas L., 3,718,839.
Reinhard, Russell R.; and Blackley, William D., to Texaco Inc. Purifying bis (perfluoroalkyl) nitroxide. 3,718,695, Cl. 260-583.00d.
Reitz, Charles F.: *See—*
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Reitz, Werner; and Schwerin, Gunther, to Bosch, Robert, G.m.b.H. Control apparatus for a harvesting machine. 3,717,983, Cl. 56-208.000.
Remy, E. P., & Cie: *See—*
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Watanabe, Kantaro, 3,718,756.
Rew, Robert P.: *See—*
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Reyner, Ellis M.; and Reyner, Margaret E., said Reyner, Ellis M., assor. to said Reyner, Margaret E. Pressurized container with non-rigid follower. 3,718,236, Cl. 222-386.500.
Reyner, Margaret E.: *See—*
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Reynolds, Charles Edward; and Gombar, Eugene Leonard, to AMP Incorporated. Connecting device for printed circuit board. 3,718,895, Cl. 339-258.00r.
Reynolds, Delbert D.: *See—*
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Rice, Hal H.; and Holzwarth, James C., to General Motors Corporation. Method of forming a thermally insulated composite article. 3,718,172, Cl. 164-75.000.

Rice, Hal H., to General Motors Corporation. Heater coil support. 3,718,497, Cl. 117-35.00r.

Rice, Philip J., Jr., to American Express Investment Management Company. Electrostatic matrix head construction. 3,718,936, Cl. 346-74.0es.

Richard, William R., Jr., to Monsanto Company. Functional fluid compositions. 3,718,596, Cl. 252-78.000.

Richards, Gary E.: *See—*
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Richards, Mildred C.: *See—*
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Richardson, Vernon C. H. Method of and apparatus for communiting rubber tires. 3,718,284, Cl. 241-23.000.

Richardson-Merrell Inc.: *See—*
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Rinesch, Rudolf, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Plant for continuous casting without deep casting stream penetration. 3,718,175, Cl. 164-254.000.

Ring, Walter R., Sr.: *See—*
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Ripka, William Charles, to Du Pont de Nemours, E. I., and Company. Process for the preparation of 21-chloro-6,6,9 alpha-trifluoro-11 beta, alpha, 17 alpha-trihydroxy-1,4-pregnadien-3,20-dione 16,17-ketals and selected intermediates. 3,718,673, Cl. 260-397300.

Risley, Gerald Thomas: *See—*
Fothergill, Reginald Allan; Bennett, Reginald Frank Charles; Risley, Gerald Thomas; and Weeks, William Stanley, 3,718,918.

Ristau, Theodore F., to General Motors Corporation. Torsions impact energy absorbing device. 3,718,326, Cl. 267-140.000.

Ritcey, Gordon Malcolm; and Lucas, Bernard Henry, to Canadian Patents and Development Limited. Liquid-liquid separation of cobalt from ammoniacal solutions. 3,718,458, Cl. 75-119.000.

Roberts, William L.: *See—*
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Robertshaw Controls Company: *See—*
Good, Arthur L., 3,718,795.
Russell, William J., 3,718,280.

Robertson, J. Douglas, to Mount Hope Machine Company, Incorporated. Cloth straightening apparatus. 3,717,909, Cl. 26-51.400.

Robison, Billie J.; and Lucic, Richard A. D., to Hewlett-Packard Company. Sputtering system with spirally coiled coolant coil. 3,718,572, Cl. 204-298.000.

Rockwell Manufacturing Company: *See—*
Berends, Emerson R., 3,718,168.
Keiter, Edward F.; Pfleiderer, Glenn F.; and Pettigrew, David D., 3,718,405.

Roeder, Gerald M., to United States Steel Corporation. Package of screws. 3,718,252, Cl. 206-56.0dg.

Rogel, Albert P.; and Scalese, Joseph J. Eddy current flaw detection system. 3,718,855, Cl. 324-37.000.

Rogers, Chester D., to Jacobsen Manufacturing Company. Implement tool arm control. 3,718,192, Cl. 172-624.000.

Rogers, Howard H.; and Pilipovich, Donald, to North American Rockwell Corporation. Process of making ClF_3O. 3,718,557, Cl. 204-157.100.

Rogers, Lynn C.; and Hunt, Mack W., to Continental Oil Company. Preparation of neutral and highly basic alkylphenates and sulfurized alkylphenates. 3,718,589, Cl. 252-33.400.

Rohr, Franz-Josef: *See—*
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Rohr Industries, Inc.: *See—*
Pascoe, Larry B., 3,718,822.

Rohrback, Gilson H., to Magna Corporation. Ionic pH control. 3,718,556, Cl. 204-149.000.

Rohte, Oskar: *See—*
Eriksoo, Edgar; Fex, Hans; Hogberg, Knut Bertil; Mollberg, Rene; and Rohte, Oskar, 3,718,694.

Rollins, Thomas J., to Motorola, Inc. Vehicle monitoring system including automatic preselection of desired satellite receiver. 3,718,899, Cl. 340-23.000.

Rollo, William C.; and Melancon, John D. Solvent for cleaning well bores, flowlines, etc. 3,718,586, Cl. 252-8.55b.

Root, James R., to Ruskin Manufacturing Company. Control damper construction. 3,718,081, Cl. 98-110..000.

Rosback, Donald H., to Universal Oil Products Company. Adsorbing olefins with a copper-exchanged type X zeolite. 3,718,580, Cl. 208-310.000.

Rose, John Brewster: *See—*
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Rose, Phillip C. Holster with pistol retaining mechanism. 3,718,240, Cl. 224-2.00b.

Rosenblum, William J. Wallboard repair device. 3,717,970, Cl. 52-514.000.

Roseveare, Ronald Newman: *See—*
Wyeth, Nathanial Convers; Roseveare, Ronald Newman; and Carmichael, Keith Stewart, 3,718,229.

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Rosse, Thomas A.: *See—*
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Rosse, Thomas A.; Blackmer, David E.; Zindler, Jerrold; and Kelley, Thomas F., to Instrumentation Laboratory, Inc. Analytical apparatus. 3,718,439, Cl. 23-259.000.

Rosser, Daniel B.: *See—*
Frederick, Albert R.; Paine, Joseph L.; and Rosser, Daniel B., 3,718,841.

Rosser, Eugene P.: *See—*
Lorenz, Howard I.; and Rosser, Eugene P., 3,718,196.

Rossetti, Carlo. Apparatus for the production of cast polymer sheets. 3,718,182, Cl. 165-166.000.

Roth, Alton A.; Dzioba, Don L.; and Yonker, John F., to General Motors Corporation. Flow switch assembly. 3,718,788, Cl. 200-81.90r.

Roth, Marc. Determination ammonia and organic amino compounds. 3,718,432, Cl. 23-230.00r.

Roueche, Armand, to Ciba-Geigy AG. Triazole azo pigments. 3,718,640, Cl. 260-157.000.

Royal, Lewis M., to Texas Instruments, Incorporated. Minimum irritation potential potting compound. 3,718,617, Cl. 260-30.4ep.

Ruskin Manufacturing Company: *See—*
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Russell, William J., to Robertshaw Controls Company. Fluid pressure transmitter and system therefor. 3,718,280, Cl. 236-44.00r.

Rustad, Norman E., to Quaker Oats Company, The. Curing polyurethane prepolymers with liquid comprising 4,4'-methylenebis (2-chloroaniline) and ethylene oxide capped bisphenol. 3,718,619, Cl. 260-47.0cb.

Rustad, Norman E., to Quaker Oats Company, The. Method of curing polyurethane prepolymers with liquid extender comprising 4,4'-methylenebis (2-chloroaniline) and low molecular weight. 3,718,624, Cl. 260-77.5am.

Sabater, Eudaldo; and Schlemmer, Lothar, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Stretching film of partially crystalline polymers. 3,718,727, Cl. 264-289.000.

Sabo, William T. Elastic amusement or exercise device. 3,718,329, Cl. 273-1.00r.

Sacks, Francis G. Shelf. 3,718,101, Cl. 108-152.000.

Sagami Chemical Research Center: *See—*
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Saishima, Takayuki: *See—*
Nagaoka, Yoshitomi; and Saishima, Takayuki, 3,718,753.

Sakamaki, Tadatoshi: *See—*
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Salat, Carlos Ferrer; Batlles, Jorge Ferrer; and Riers, Juan Colombe, to Laboratorios Ferrer S.L. Tris(hydroxymethyl)aminomethane salt of thioctic acid. 3,718,664, Cl. 260-327.00a.

Salzano, Francis J.; Davis, Andrew M.; and Isaacs, Hugh S., to United States of America, Atomic Energy Commission. Sulfur oxide activity measurement. 3,718,546, Cl. 204-1.00t.

Samour, Carlos M.; and Richards, Mildred C., to Kendall Company, The. Monomeric emulsion stabilizers containing an N-diallylacetamido or N-dimethallylacetamido radical. 3,718,693, Cl. 260-561.00a.

Sanctuary, Clifford, to Del Mar Engineering Laboratories. Dynamic ECG presentation. 3,718,772, Cl. 179-100.20b.

Sandoz Ltd.: *See—*
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Sangamo Electric Company: *See—*
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Santoro, Gerald C.; and Sibert, Glenn R. Golf putter guide. 3,718,333, Cl. 273-192.000.

Sasaki, Koju; Kobayashi, Akihiro; and Takahashi, Naoki, to Nittan Company, Limited. Ionization smoke detector. 3,718,919, Cl. 340-237.00s.

Sato, Akira: *See—*
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Sato, Hideaki: *See—*
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Satz, Richard G.: *See—*
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Sauriol, John T., to Intercontinental Plastics Manufacturing. Meter housing. 3,717,963, Cl. 52-19.000.

Savenije, Franciscus Gerhardus, to Auping N.V. Hinge construction. 3,717,902, Cl. 16-171.000.

Sawamura, Mitsuyoshi; and Hihara, Takeshi. Apparatus for electrically bonding cemented carbide elements to the teeth of a saw blade. 3,718,799, Cl. 219-77.000.

Sayers, Eugene H., to General Motors Corporation. Electrical connector. 3,718,750, Cl. 174-94.00r.

Sayigh, Adnan A. R.: *See—*
Rao, Durvasula V.; Ulrich, Henri; Stuber, Fred A.; and Sayigh, Adnan A. R., 3,718,692.

Scalese, Joseph J.: *See—*
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Schade, Charles W.; and Staley, Jack F., to General Motors Corporation. Method of manufacturing waved and coned friction material faced friction plates. 3,718,796, Cl. 219-10.410.

Schade, Frank Stanley, to National Blank Book Company, Inc. Arched ring-wire post binder. 3,718,402, Cl. 402-31.000.

Schaefer, F. & M., Brewing Co., The: *See—*
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Schaps, Joseph E.: *See—*
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Schell, Raymond A.: *See—*
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Scherf, Gerhard W.; and Pfaff, Gary C. Corrosion inhibitor containing a water soluble emulsion of a fatty amine with a cationic emulsifier. 3,718,604, Cl. 252-391.000.

Schering Aktiengesellschaft: *See—*
Laurent, Henry; Kolb, Karl-Heinz; and Wiechert, Rudolf, 3,718,671.

Schertler, Paul H.; and Strobel, Rupert F., to Minnesota Mining and Manufacturing Company. Buried pipeline signal. 3,718,113, Cl. 116-114.00r.

Schlafhorst, W., & Co.: *See—*
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Schleupen, Richard; and Ferdinand, Grob, to Bosch, Robert, G.m.b.H. Arrangement for automatically controlling the movement of motor vehicles. 3,718,201, Cl. 180-98.000.

Schmid, Rolf: *See—*
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Schnabel, Walter. Universal unit for toy blocks. 3,717,948, Cl. 46-25.000.

Schneider, Clayton J., Jr., to United States of America, Army, mesne. Expendable launcher munition. 3,718,070, Cl. 89-1.800.

Schneider, Fritz, to Impex-Essen GmbH. Driving device for driving bolts or other drivepins into fixed structural or building elements or the like. 3,718,271, Cl. 227-10.000.

Schoengold, Herbert, to Electronic Research Associates, Inc. Loudspeaker diaphragm having marginal air release passages and center high frequency propagator. 3,718,779, Cl. 179-115.50r.

Schon, Otmar, to Greer Hydraulics, Inc. Accumulator control system. 3,718,158, Cl. 137-593.000.

Schopf, Albert: *See—*
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Schopper, Erwin: *See—*
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Schott, John C.: *See—*
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Schrader, Robert W., to Eastman Kodak Company. Process for heat stabilizing cellulose triacetate films or sheets. 3,718,728, Cl. 264-346.000.

Schreckendgust, Jay George, to Staley, A. E., Manufacturing Company. Magnetic development. 3,718,466, Cl. 96-48.00r.

Schubert, Karl P.; and Rienerth, George R., to Acme-Cleveland Corporation. Electric coupling control. 3,718,211, Cl. 192-12.00d.

Schuessler, Walter E. Cap with adjustable face mask. 3,717,882, Cl. 2-173.000.

Schultz, Herman S., to GAF Corporation. Polymerization of alkyl vinyl ethers with catalyst based on dialkyl aluminum halide and water. 3,718,634, Cl. 260-91.10m.

Schulz, John C.; and Lyday, Richard W., to General Motors Corporation. Engine mount assembly. 3,718,304, Cl. 248-9.000.

Schumacher, Berthold W., to Westinghouse Electric Corporation. Corpuscular beam in mining and excavation. 3,718,367, Cl. 299-14.000.

Schumacher, Walter C., to General Electric Company. Resiliently reinforced NEMA contact. 3,718,894, Cl. 339-217.0ps.

Schwarte, Jurgen: *See—*
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Scott, Lyle B., to Jackson, Byron, Inc. Subsea bumper sub hydraulic bypass system. 3,718,183, Cl. 166-5.000.

Scott-Fisher Development Co.: *See—*
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Scotto, Vincent: *See—*
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Scray, Eugene J., Jr.; and Wilder, Donald L., to International Business Machines Corporation. Time coherent sampling system for eliminating the effects of test system jitter and providing a simplified single transient threshold test. 3,718,910, Cl. 340-172500.

Scripto, Inc.: *See—*
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Sealy, Inc.: *See—*
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Secrist, David E.: *See—*
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Seelbach, Heinz; and Eversberg, Gerhard, to Fa. Reininghaus & Co. Illumination device. 3,718,816, Cl. 240-52.00r.

Self, Kenneth W.; Chew, Norman B.; and Twyman, Bill I., to Freightliner Corporation. Truck comprising tractor and semi-trailer. 3,718,346, Cl. 280-415.00b.

Sequaris, Etienne-Thomas, to Helka S.A. Packing piece for civil engineering works. 3,717,969, Cl. 52-396.000.

Severini, Joseph H.: *See—*
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Shaler Company, The: *See—*
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Sharp, Sandra. Display device. 3,718,260, Cl. 211-13.000.

Sharpe, Cecil H., to General Motors Corporation. Contaminant separation. 3,718,258, Cl. 210-98.000.

Shea, Frederick L.: *See—*
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Sheckells, Amuel E. Motor driven operating mechanism for revolving doors. 3,717,954, Cl. 49-43.000.

Shein, Jury Ivanovich, to Vsesojuzny nauchno-issledovatelsky i proektny institur. Method of shaping sheet blanks to spherical form and a device to realize same. 3,718,021, Cl. 72-126.000.

Shelby, Richard K., to Monsanto Company. Apparatus for blow molding containers having raised bottom wall portions. 3,718,416, Cl. 425-326.000.

Sheldon, Luther M., to General Electric Company. Grounded flanged wiring device. 3,718,884, Cl. 339-14.00r.

Sheldon, Luther M., to General Electric Company. Direction lock for angle plug. 3,718,890, Cl. 339-107.000.

Shell Oil Company: *See—*
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Muirhead, Leslie A., 3,718,616.

Shen, Tsung-Ying; and Witzel, Bruce E., to Merck & Co., Inc. 5-Phenyl-2-piperidones and 5-phenyl-2-thiopiperidones in compositions and methods for treating pain, fever and inflammation. 3,718,743, Cl. 424-267.000.

Sherwin-Williams Company, The: *See—*
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Shiba, Keisuke; and Sato, Akira, to Fuji Photo Film Co., Ltd. Silver halide supersensitized photographic emulsion. 3,718,475, Cl. 96-124.000.

Shibata, Shigeru. Composite sheets for agricultural use. 3,718,533, Cl. 161-165.000.

Shields, Charles J., to States Steamship Company. Shipping and storage container interlock. 3,718,218, Cl. 214-10.50r.

Shigemori, Hideto: *See—*
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Showa Sangyo Kabushiki Kaisha: *See—*
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Siebentritt, Frank H.; and Silvera, Esteban, to North Branch Industries, Inc. and 5% to Hough, William T., mesne. Ram-valve level indicator. 3,718,157, Cl. 137-551.000.

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Sieg, Robert P., to Chevron Research Company. Hexane conversion. 3,718,706, Cl. 260-676.00r.

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Signode Corporation: *See—*
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Sill, Arthur D.; and Fleming, Robert W., to Richardson-Merrell Inc. Fluorenol bis-basic esters. 3,718,685, Cl. 260-473.00f.

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Simonetta, Massimo, to Societa Italiana Resine S.I.R. S.p.A. Process for producing ethylene. 3,718,709, Cl. 260-683.00r.

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Skelton, Robert F., to Mix-Mill, Inc. Heat treating system for grains and legumes. 3,718,322, Cl. 263-33.00r.

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Smajo, Joseph J., to Unilux Graphics, Inc., mesne. Device for determining proper color balance in color printing. 3,718,397, Cl. 355-88.000.

Small, Albert W. Cipher device and method. 3,718,349, Cl. 283-17.000.

Smidth, F. L., & Co.: *See—*
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Smith, Clarence J., to Shaler Company, The. Method of making tire studs. 3,717,927, Cl. 29-517.000.

Smith, Edmund G.; and Hood, John W. Microbial biolysis process. 3,718,582, Cl. 210-6.000.

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Smyth, Nelda Marjorie, to American Cyanamid Company. Polymeric viscosity control additives for silica thixotropic compositions. 3,718,614, Cl. 260-31.80r.

Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa: *See—*
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Societa Italiana Resine S.I.R. S.p.A.: *See—*
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Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
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Societe d'Etudes et de Recherches de Ventilation et d'Aeraulique: *See—*
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Sound Systems International, Inc.: *See—*
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Spencer, John; and Janssen, Donald E., to Eastman Kodak Company. Surface development process utilizing an internal image silver halide emulsion containing a composite nucleating agent-spectral sensitizing polymethine dye. 3,718,470, Cl. 96-64.000.

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Stagner, Jack R. Overload indicator. 3,718,792, Cl. 200-85.00r.

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Sterilizer Control Royalties: *See—*
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Stevens, Jacques; and George, Michel, to Solvay & Cie. Catalysts and process for the polymerization of olefins. 3,718,636, Cl. 260-94.90d.

Stevenson, Howard Jackson. Self-cleaning animal enclosure structure. 3,718,119, Cl. 119-28.000.

Stewart, Donald F., to Allied Chemical Corporation. Powder feeding device. 3,718,164, Cl. 141-1.000.

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Stobb, Rudolph C.: *See—*
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Stobb, Walter J.: *See—*
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Stoughton, George R., to General Motors Corporation. Dual dimmer switch circuit. 3,718,835, Cl. 315-83.000.

Stover, Harris A., to Collins Radio Company. Wide band multiplexing system. 3,718,766, Cl. 179-15.0bm.

Stover, Harris A., to Collins Radio Company. False VOR bearing indication monitor. 3,718,928, Cl. 343-106.00r.

Stover, William A., to Mobil Oil Corporation. Cracking over contaminated catalyst. 3,718,553, Cl. 208-120.000.

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Streck, Clemens, to GAF Corporation. Alcoholic composition of a cationic dye-alkyl aryl sulfonic acid complex and process of dyeing therewith. 3,718,428, Cl. 8-173.000.

Strecke, Heinz. Traversing hoist arrangement. 3,718,263, Cl. 212-128.000.

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Strickman, Robert L., Foundation, Inc., The; care of Valicenti, Leighton, Reid and Pine: *See—*
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Strike, Donald P.; and Smith, Herchel, to American Home Products Corporation. 2,3-Disubstituted levulinaldehyde compounds. 3,718,667, Cl. 260-345.800.

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Stromberg-Carlson Corporation: *See—*
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Strongin, Ned. Toy vehicle. 3,717,952, Cl. 46-244.00d.

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Sugiyama, Michiyuki; Takatori, Yoshikuni; Touyama, Ryosuke; Nakamura, Akira; Yamauchi, Teiji; Kato, Masaaki; and Nakashiba, Yoshio, to Taito Co., Ltd. and Asahi Kasei Kogyo Kabushiki Kaisha. Process for electrodialysis of sugar solutions. 3,718,560, Cl. 20-180.00p.

Summers, John C., to Du Pont de Nemours, E. I., and Company. Compound for retarding combustion of polycarbonamides. 3,718,658, Cl. 260-501.120.

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Superior Oil Company: *See—*
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Sureau, Robert Frederick Michel; and Alicot, Marie-Josephe Jeanne, to Ugine Kulhmann. Naphthoylene-benzimidazolium dyestuffs. 3,718,652, Cl. 260-282.000.

Sussenguth, Edward H.: *See—*
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Suzuki, Shigeru; Kanno, Tadaaki; and Sakamaki, Tadatoshi, to Kabushiki Kaisha Ricoh. Developer liquid supplying method and device for liquid development electrophotography. 3,718,155, Cl. 137-433.000.

Swearingen, Dean E. Hydraulic corrosion monitoring coupon injector. 3,718,034, Cl. 73-86.000.

Swift, Merle E. Combination boat-automobile trailer. 3,718,227, Cl. 214-512.000.

Swiss Aluminium Ltd.: *See—*
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Szablowski, Teofil, to General Motors Corporation. Pressure responsive switch. 3,718,791, Cl. 200-85.00a.

Szanny, Roy G., to General Motors Corporation. Detachable fastening clip. 3,718,881, Cl. 338-22.000.

Tabata, Yoneho; and Kojima, Gen, to Asahi Glass Company Ltd. Process for producing a cross-linked copolymer of

tetrafluoroethylene and propylene using high energy ionizing radiation. 3,718,558, Cl. 205-159.200.
Tait, David Adams Gilmor. Electrical testing methods and apparatus. 3,718,858, Cl. 324-60.00c.
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Thompson, Stanley P. Fighting for dehydrator drum. 3,717,937, Cl. 34-108.000.
Thompson, William H., to W. & H. M. Goulding Limited. Production of potassium dihydrogen phosphate fertilizers. 3,718,453, Cl. 71-34.000.
Thomson, John, Jr.: *See—*
Fraser, David Bruce; O'Bryan, Henry Miles, Jr.; and Thomson, John, Jr., 3,718,723.
Thomson-CSF: *See—*
Assouline, Georges J.; Hareng, Michel; and Leiba, Eugene, 3,718,381.
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Thornley, Richard F. M.: *See—*
Bate, Geoffrey; Echelmeier, Robert H.; Everett, Larry H.; Kehr, William D.; Schaps, Joseph E.; Taylor, Gerald; and Thornley, Richard F. M., 3,718,776.
Thornton, Duane V.; and Holt, Jan D., to ACF Industries, Incorporated. Pressure bulkhead for a railway car. 3,718,099, Cl. 105-369.0ba.
Tile Council of America, Inc.: *See—*
Wagner, Herman B.; and Weiant, David S., 3,718,618.
Tilles, Harry: *See—*
Baker, Don R.; Tilles, Harry; and Dewald, Chester L., 3,718,455.
Tillman, Herman L.; and Booth, Ralph E. Bowling score computer. 3,718,812, Cl. 235-168.000.
Timmler, Helmut: *See—*
Berthold, Werner; Von Konig, Anita; and Timmler, Helmut, 3,718,468.
Titus, Hans-Joachim. Device for the peeling and extracting of solid material from a centrifuge. 3,718,220, Cl. 214-17.0db.
Toda, Tadahide: *See—*
Oishi, Kazuo; Kurebayashi, Tokuhiro; Ando, Noriyoshi; Yamamoto, Noboru; Toda, Tadahide; Nohira, Hidetaka; and Katoh, Takashi, 3,718,126.
Tokyo Shibaura Electric Co., Ltd.: *See—*
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Yokota, Mitsuhisa; and Sato, Hiroya, 3,718,837.
Tokyo Shibaura Electric Company, Ltd.: *See—*
Juri, Isao; Koguchi, Kazuo; Kuroiwa, Toshimi; and Koken, Tomoyuki, 3,718,850.
Tanaka, Hideo; Imajyo, Yasutaka; Takano, Ikuo; Takahashi, Jiro; and Oka, Kazumichi, 3,718,840.
Tolmie, Robert J.; and Kovacic, Zoran, to Sperry Rand Corporation. Rigid hair dryer hood. 3,717,936, Cl. 34-99.000.
Tomerlin, Benjamin E. Probability teaching aid. 3,717,941, Cl. 35-30.000.
Tomita, Jun, to Minnesota Mining and Manufacturing Company. Heat-shrinkable pressure-sensitive adhesive tape. 3,718,495, Cl. 117-7.000.
Tomoshige, Toru; and Honma, Shiro, to Mitsui Petrochemical Industries, Ltd. Process for polymerization of olefins and catalyst composition therefor. 3,718,635, Cl. 260-93.700.
Tone, Frederick F.: *See—*
Edwards, Evan A.; and Tone, Frederick F., 3,718,471.
Tong, Shih Yung, to Bell Telephone Laboratories, Incorporated. Error correcting systems utilizing one-half optimum diffuse codes. 3,718,905, Cl. 340-146.0aq.
Toray Industries, Inc.: *See—*
Okamoto, Miyoshi; and Watanabe, Koji, 3,718,534.
Tornoe, John Axel; and Marotto, Robert Anthony, to Schlage Lock Company. Lock set handle. 3,718,015, Cl. 70-224.000.

Toth, Alex, to Ellis Corporation. Commercial laundry machine and base assembly and cart positioner therefor. 3,718,013, Cl. 68-208.000.

Touyama, Ryosuke: *See—*
Sugiyama, Michiyuki; Takatori, Yoshikuni; Touyama, Ryosuke; Nakamura, Akira; Yamauchi, Teiji; Kato, Masaaki; and Nakashiba, Yoshio, 3,718,560.

Tower, Ronald H. Instantaneous on-line water tester. 3,718,435, Cl. 23-253.00r.

Townsend Engineering Company: *See—*
Townsend, Ray T., 3,717,903.

Townsend, Ray T., to Townsend Engineering Company. Hand operated fish skinning tool. 3,717,903, Cl. 17-67.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Ishikawa, Mineo, 3,717,934.
Kusakabe, Takeshi; Kikuchi, Makoto; and Suzuki, Isao, 3,717,962.
Suzuki, Isao, 3,717,961.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Ochiai, Takeshi, 3,718,374.
Oishi, Kazuo; Kurebayashi, Tokuhiro; Ando, Noriyoshi; Yamamoto, Noboru; Toda, Tadahide; Nohira, Hidetaka; and Katoh, Takashi, 3,718,126.

Trampe, George M.: *See—*
Pande, Kailash C.; and Trampe, George M., 3,718,684.

Traub, Henry A., to Shamban, W. S., & Co. Sealing assembly. 3,718,338, Cl. 277-165.000.

Tregurtha, Steven John, to Lucas, Joseph, (Industries) Limited. Electrical switch having angularly oriented rectangular contacts. 3,718,794, Cl. 200-166.0bb.

Tremblay, Maurice Robert; and Maurer, Richard Launt, to Lipton, Thomas J., Limited. Pasta. 3,718,480, Cl. 99-85.000.

Trenta, Gerald M.: *See—*
Crano, John C.; and Trenta, Gerald M., 3,718,711.

Tri-Line Electric Co., Inc.: *See—*
Fila, Dominick, 3,718,786.

Troeger, Richard P.: *See—*
Watson, William E.; and Troeger, Richard P., 3,718,736.

Troffkin, Howard Julian; and Wystrach, Vernon Paul, to United States of America, Army, mesne. Product and process. 3,718,445, Cl. 44-7.00c.

Trofimenko, Swiatoslaw; and Vaughan, Lawrence G., to Du Pont de Nemours, E. I., and Company. Presious metal decorating compositions containing bis-chelate derivatives of palladium. 3,718,488, Cl. 106-1.000.

Trokin, Jury Alexandrovich: *See—*
Afanasiev, Vadim Nikolaevich; Belyaev, Jury Pavlovich; Gaiduchik, Vladimir Olegovich; Gruzin, Pavel Lukich; Konkin, Nikolai Alexandrovich; Megarsky, Valery Vasilievich; Okunev, Boris Nikolaevich; and Trokin, Jury Alexandrovich, 3,718,817.

Trost, Werner, to Demag Aktiengesellschaft. Lift truck for hot vessels, particularly for steel-mill converters. 3,718,265, Cl. 214-1.00d.

Trubert, Georges; and Droulin, Jean Louis, to La Telemecanique Electrique. Electrical device for measuring and controlling the temperature at a large number of points. 3,718,924, Cl. 340-417.000.

True, Howard D. F., Jr.: *See—*
Gittelson, Joel A.; and True, Howard D. F., Jr., 3,718,237.

Tsentrglny Nauchno-Issledovatelsky i Proektno-Experimentalny Institut Inzhenernogo Oborudovania Gorodov: *See—*
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Tsubouchi, Hideo: *See—*
Matsui, Kazuma; and Tsubouchi, Hideo, 3,718,151.

Tsubouchi, Norio: *See—*
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Tsujide, Tohru: *See—*
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Tull, Roger J.: *See—*
Weinstock, Leonard M.; Tull, Roger J.; and Mulvey, Dennis M., 3,718,647.

Tupaj, Manfred Paul; and Engert, Heinz, to Sud-Atlas-Werke G.m.b.H. Magnetic tape recorder having a friction wheel drive for the tape reel carrier shafts. 3,718,777, Cl. 179-100.20r.

Turnbull, John Peter, to Glaxo Laboratories Limited. Process for the preparation of 17-oxo-steroids from 17α-hydroxy-20-oxo-steroids. 3,718,670, Cl. 260-397.300.

Turnbull Marine Design Company Limited: *See—*
Clay, John Armstrong, 3,718,378.

Tushaus, Leonard A., to Minnesota Mining and Manufacturing Company. Pressure-sensitive adhesives based on cyclic terpene urethane resin. 3,718,712, Cl. 260-858.000.

Twyman, Bill I.: *See—*
Self, Kenneth W.; Chew, Norman B.; and Twyman, Bill I., 3,718,346.

Tysko, Leon Albert; and Burnet, Robert Cortland, to Van Dyk Research Corporation. Variable sheet length paper feed and cutting system. 3,718,394, Cl. 355-13.000.

Uchiyama, Kensuke: *See—*
Kobari, Masao; Hagiwara, Hiroshi; and Uchiyama, Kensuke, 3,718,153.

Ueda, Hiroshi; and Kuramoto, Yoshio, to Minolta Camera Kabushiki Kaisha. Shutter speed control apparatus for a camera. 3,718,076, Cl. 95-10.00c.

Ugine Kulhmann: *See—*
Sureau, Robert Frederick Michel; and Alicot, Marie-Josephe Jeanne, 3,718,652.

Uhl, George A.; and Baillie, Lloyd A., to Atlantic Richfield Company. Process for charging catalyst. 3,718,579, Cl. 208-143.000.

Ulbrich, Richard W. Radiant lining. 3,718,323, Cl. 263-40.00r.

Ulrich, Henri: *See—*
Rao, Durvasula V.; Ulrich, Henri; Stuber, Fred A.; and Sayigh, Adnan A. R., 3,718,692.

Umina, Anthony P.: *See—*
Davis, James W.; Umina, Anthony P.; and Kelley, Nancy J., 3,718,483.

Uniflo Systems Company: *See—*
Bloomfield, Roger D.; and Wirth, Gary J., 3,718,096.

Unilux Graphics, Inc., mesne: *See—*
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Union Carbide Corporation: *See—*
Baird, Robert J.; and Everett, Thomas G., Jr., 3,717,914.
Batta, Louis Bela, 3,717,974.
Comstock, Lowell R.; and Smith, Percy L., 3,718,714.
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Matzner, Markus; Reichle, Walter T.; Chow, Sui-Wu; and McGrath, James E., 3,718,672.
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Uniroyal Englebert France S.A.: *See—*
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Uniroyal Inc.: *See—*
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United Industrial Syndicate, Inc.: *See—*
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United Kingdom Atomic Energy Authority: *See—*
Fothergill, Reginald Allan; Bennett, Reginald Frank Charles; Risley, Gerald Thomas; and Weeks, William Stanley, 3,718,918.
Williams, Raymond; and Leckenby, Robert Edwin, 3,718,379.

United States Borax & Chemical Corporation: *See—*
Morgan, Cyril Alfred; Arber, Scott Gordin; and Young, Oswald William John, 3,718,490.

United States Borox & Chemical Corporation: *See—*
Woods, William G.; Whiten, Joseph G.; and Nies, Nelson P., 3,718,615.

United States of America
Agriculture: *See—*
Lysons, Hilton H.; and Mann, Charles N., 3,718,262.
Air Force: *See—*
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Army: *See—*
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Gerlach, Horst W. A., 3,718,869.
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Weisman, Irving H., 3,718,319.
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Atomic Energy Commission: *See—*
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Pitts, Sam H., Jr., 3,718,677.
Salzano, Francis J.; Davis, Andrew M.; and Isaacs, Hugh S., 3,718,546.
Wu, James S. H.; and Baker, Broughton L., 3,718,583.
National Aeronautics and Space Administration; Administrator; with respect to an invention of:
Perlman, Marvin. N-Ary linear feedback shift register with binary logic. 3,718,863, Cl. 328-37.000.
Navy: *See—*
Bey, Paul P.; Giuliani, John F.; and Rabin, Herbert, 3,718,602.
Cook, Rufus Lee; and Folds, Donald L., 3,718,898.
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United States Steel Corporation: *See—*
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Bacon, James A.; and Lindenmuth, Charles J., 3,718,039.
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Universal Oil Products Company: *See—*
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University of California, The Regents of the: *See—*
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University of Kentucky Research Foundation, The, mesne: *See—*
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University of Michigan Technological, Board of Control: *See—*
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Upjohn Company, The: *See—*
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Rao, Durvasula V.; Ulrich, Henri; Stuber, Fred A.; and Sayigh, Adnan A. R., 3,718,692.

Urbanick, Burton Alfred, to Met-L-Wood Corporation. Panel seal. 3,717,955, Cl. 49-488.000.

U.S. Philips Corporation: *See—*
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Tak, Marinus Gerardus Antoine; and Van Klinken, Otto Jan, 3,718,600.
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Ushakoff, Alexis E., to Cordis Corporation. Immuno diffusion cell. 3,718,436, Cl. 23-253.00r.

Ushiyama, Keiichi: *See—*
Okamoto, Toshihiko; Hirobe, Masaaki; Suzue, Seigo; Nagatsu, Yoshio; Ushiyama, Keiichi; Satoh, Susumu; and Irikura, Tsutomu, 3,718,656.

Ushiyama, Yasuichi: *See—*
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USM Corporation: *See—*
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Passer, La Roy B., 3,718,068.
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Uyeda, Mikio: *See—*
Ozawa, Tokuji; Uyeda, Mikio; and Suzuki, Shigenori, 3,718,708.

Uzuanis, Joseph, Jr.: *See—*
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Van Brimmer, Russell H.: *See—*
Taylor, Richard P.; Van Brimmer, Russell H.; and Culp, Fred E., 3,717,945.

Van Der Lely, Cornelis. Mowing machines. 3,717,981, Cl. 56-6.000.

Van Dyk Research Corporation: *See—*
Tysko, Leon Albert; and Burnet, Robert Cortland, 3,718,394.

Van Horn, James H., to General Dynamics Corporation. Pulse classification system. 3,718,929, Cl. 343-17.20r.

Van Klinken, Otto Jan: *See—*
Tak, Marinus Gerardus Antoine; and Van Klinken, Otto Jan, 3,718,600.

Van Osmael, Claude Henri: *See—*
Ponghis, Nicolas Gerassimos; and Van Osmael, Claude Henri, 3,718,758.

Van Slyke, Allan S., to General Motors Corporation. Fiber optic illuminator and method of making same. 3,718,814, Cl. 240-8.160.

Van Uitert, Le Grand Gerard: *See—*
Dental, Andrew Gomperz; Van Uitert, Le Grand Gerard; and Williams, John Charles, 3,718,601.

Vanderford, Wallace S., Jr.: *See—*
Westeren, Herbert W.; Kimball, William H.; Scotto, Vincent; and Vanderford, Wallace S., Jr., 3,718,324.

Vandergrift, Don W.; and Secrist, David E., to Double Envelope Corporation. Envelope. 3,718,276, Cl. 229-72.000.

Vaughan, Lawrence G.: *See—*
Trofimenko, Swiatoslaw; and Vaughan, Lawrence G., 3,718,488.

Venditti, Arthur P., to Klamer, Reuben B. Adjustable divining rod device. 3,717,950, Cl. 46-241.000.

Vereinigte Flugtechnische Werke-Fokker GmbH: *See—*
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Vereinigte Leichtmetall-Werke GmbH: *See—*
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Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft: *See—*
Rinesch, Rudolf, 3,718,175.

Verhellen, Norbert J. B., to Regal Manufacturing Company. Apparatus for rotating spindle at high speed. 3,718,050, Cl. 74-206.000.

Vernon Company, The: *See—*
Woofter, Cecil B., 3,718,261.

Vernon Tool Company: *See—*
Blackburn, Marvin J., 3,718,017.

Vertegaal, Jacobus G., to Stork Amsterdam N.V. Screen printing machine with adjustable bridge. 3,718,086, Cl. 101-115.000.

Vescio, Kimbel L.: *See—*
Morton, Evans T.; and Vescio, Kimbel L., 3,717,965.

Vetco Offshore Industries, Inc.: *See—*
Larralde, Edward; and Beaufort, Ronald E., 3,718,316.

Victor Company of Japan, Limited: *See—*
Arai, Kinjiro; and Nakatani, Yoshio, 3,717,923.

Villarroel, Fernando: *See—*
Joyce, James W., Jr.; and Villarroel, Fernando, 3,718,044.

Vinas, Maria Teresa Clermont. Device for the wet treatment of textile materials. 3,718,012, Cl. 68-9.000.

Violleau, Andre; Coffy, Rene Louis; and Bancal, Bernard Robert Laurent Marie, to Societe Nationale Industrielle Aerospatiale. Apparatus for impregnating yarns, and more particularly glass yarns, with synthetic resins. 3,718,521, Cl. 156-433.000.

Virginia Chemicals Inc.: *See—*
Winslow, Charles E., Jr.; Plentovish, Jack; and Kise, Mearl A., 3,718,732.

Vischulis, George. Automatically adjusting photoelectric position detector. 3,718,821, Cl. 250-202.000.

Vishay Intertechnology, Inc.: *See—*
Berman, Abraham; and Gerber, George V., 3,718,883.

Visser, Peter J., to Clark Equipment Company. Load transfer mechanism. 3,718,221, Cl. 214-77.00r.

Vitelli, Vito J., to Morgan Construction Company. Apparatus including a fluidized bed for cooling steel rod through transformation. 3,718,024, Cl. 72-201.000.

Vitredent Corporation: *See—*
Brainin, Herbert, 3,717,932.

Vockenhuber, Karl: *See—*
Patels, Gottfried; and Beck, Erich, 3,718,760.

Vojir, Frank S.: *See—*
Britton, Leon R.; Vojir, Frank S.; and Wright, William W., 3,718,828.

Volkert, John K. Printed folder including mailable article. 3,718,277, Cl. 229-73.000.

Volkmann, Werner Karl: *See—*
Graf, Carlton Eugene; Skogsholm, Einar Aasen; and Volkmann, Werner Karl, 3,718,847.

von Arx, Arnold; and Kuphal, Klaus, to Aktiengesellschaft Brown, Boveri & Cie. Measuring Cerenkov radiation produced by charge particles passing through a gas as indicative of the energy of the charged particles. 3,718,818, Cl. 250-71.50r.

Von Brachel, Hanswilli: *See—*
Muller, Rolf; Von Brachel, Hanswilli; Klein, Rudolf; Schmidt, Ewald; and Bender, Heinz, 3,718,641.

Von Konig, Anita: *See—*
Berthold, Werner; Von Konig, Anita; and Timmler, Helmut, 3,718,468.

Von Werder, Fritz: *See—*
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Vosbikian, Mike; and Vosbikian, James T., to Hardware & Industrial Tool Co., Inc. Universal wheeled cart. 3,718,337, Cl. 280-47.260.

Vsesojuzny nauchno-issledovatelsky i proektny institur: *See—*
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Vyzkumny Ustav Pletarsky: *See—*
Peschl, Ervin; and Skrepek, Jan, 3,718,011.

W. & H. M. Goulding Limited: *See—*
Thompson, William H., 3,718,453.

Wada, Toshio; and Tsujide, Tohru, to Nippon Electric Company Limited. Semiconductor memory element. 3,718,916, Cl. 340-173.00r.

Wagner, George J., Jr., to United States Steel Corporation. Removable mold assembly with quick change mechanism. 3,718,177, Cl. 164-282.000.

Wagner, Herman B.; and Weiant, David S., to Tile Council of America, Inc. Epoxy resin compositions containing a partial acid-addition salt of aromatic polyamine and water soluable amine. 3,718,618, Cl. 260-47.0en.

Wakefield, Orval W., to Pit-Bar Manufacturing Company. Edge guard for buffing machine. 3,717,894, Cl. 15-97.00r.

Walker, Brooks. Dual fueled engine with temperature switchover. 3,718,000, Cl. 60-285.000.

Walker, Helen H. Tumbling of workpieces. 3,717,957, Cl. 51-9.000.

Walker, Odie Edward, Jr., to Springs Mills, Inc. Two-piece textile loom sword. 3,718,163, Cl. 139-188.000.

Walker, Peter: *See—*
Gervay, Joseph Edmond; and Walker, Peter, 3,718,473.

Wallace, Richard A. Electrogel process for removing electrolytes an concentrating the same from an aqueous solution. 3,718,559, Cl. 204-180.00g.

Wallrabenstein, Michael; Schopf, Albert; and Frank, Dieter, to Glanzstoff AG. Production of a polyacyloxalamidrazone. 3,718,625, Cl. 260-78.0tf.

Walls, Gordon William, to Commonwealth Scientific and Industrial Research Organization. Formation of twisted thread assemblies. 3,717,988, Cl. 57-34.0at.

Walters, Roger E., to Ralston Purina Company. Poultry processing apparatus. 3,718,083, Cl. 99-532.000.

Walther, Guntram: *See—*
Werdehausen, Achim; Jahnke, Ullrich; Jakobi, Gunter; and Walther, Guntram, 3,718,597.

Wandrisco, Joseph M.: *See—*
Freeman, William H.; Peterson, Leavitt A.; and Wandrisco, Joseph M., 3,718,040.

Wanner, Karl, to Bosch, Robert, G.m.b.H. Cooling system for portable impulse transmitting machines. 3,718,193, Cl. 173-117.000.

Warn-Belleview, Inc.: *See—*
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Warner, Dale J.: *See—*
Jackson, Richard H.; and Warner, Dale J., 3,718,336.

Warren, Raymond W., to United States of America, Army. Fluid stepping motor. 3,718,150, Cl. 137-829.000.

Watanabe, Kantaro, to Research Corporation. Mapping rectifier of earth S surface radiation signals scanned by artificial satellite. 3,718,756, Cl. 178-6.70r.

Watanabe, Kazutaka: *See—*
Nezu, Kazuo; Imabayashi, Ziro; Watanabe, Kazutaka; Iritani, Tadamitsu; Kataoka, Kouju; and Yoshioka, Michio, 3,718,762.

Watanabe, Koji: *See—*
Okamoto, Miyoshi; and Watanabe, Koji, 3,718,534.

Waters, Ernest, 50% to Gagliardi, Louis J. Anti-polution device. 3,717,979, Cl. 55-233.000.

Watkins, Charles H., to Universal Oil Products Company. Hydrocracking LPG production. 3,718,575, Cl. 208-59.000.

Watson, Donald W.: *See—*
McGuire, John V.; and Watson, Donald W., 3,718,525.

Watson Manufacturing Company, Inc.: *See—*
Moore, George E.; and Horlacher, Joseph D., 3,718,232.

Watson, Thomas F., Sr., to Burlington Industries, Inc. Treatment of polypropylene surface to promote adhesive bonding. 3,718,530, Cl. 161-67.000.

Watson, William E.; and Troeger, Richard P., to Allied Chemical Corporation. Process for the manufacture of hydrogen fluoride. 3,718,736, Cl. 423-485.000.

Watts, Edwin B., to Sealy, Inc. Box spring frame. 3,717,886, Cl. 5-239.000.

Wayne, Donald Gordon: *See—*
Stringer, Peter Jack Eldon Crawford; Knight, Richard Langhiam Castle; and Wayne, Donald Gordon, 3,718,037.

Webb, Jervis B., Company: *See—*
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Weinstock, Leonard M.; Tull, Roger J.; and Mulvey, Dennis M., to Frosst, Charles E., & Co. Process for making 1,2,5-thiadiazoles in the sinister configuration and novel intermediates. 3,718,647, Cl. 260-247.100.

Weisman, Irving H., to United States of America, Army. Apparatus and process for contacting immiscible liquids. 3,718,319, Cl. 259-4.000.

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Wellstein, William. Well casing side connector. 3,718,185, Cl. 166-85.000.

Wening, Richard R. Battery terminal connector and housing means. 3,718,891, Cl. 339-116.00r.

Werdehausen, Achim; Jahnke, Ullrich; Jakobi, Gunter; and Walther, Guntram, to Henkel & Cie G.m.b.H. Washing, bleaching and cleansing agents containing copolymeric N-alkylcarboxylic acid alkyleneimines. 3,718,597, Cl. 252-102.000.

Werner, Eberhard, to Eumuco Aktiengesellschaft fur Maschinenbau. Machine for stretching material prior to rolling or forging. 3,718,025, Cl. 72-222.000.

Werth, John J., to ESB Incorporated. Sodium-sulfur battery having aluminum sulfide or aluminum polysulfide in the electroyte. 3,718,505, Cl. 136-6.000.

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Westberg, Russell C. Snowmobile anti-skid device. 3,718,341, Cl. 280-28.000.

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Wiese, Harold H., to United States of America, Army. Caseless, linkless, telescoped ammunition. 3,718,089, Cl. 102-38.000.

Wild, John J. Method of stool sample collection and testing apparatus therefor. 3,718,431, Cl. 23-230.00b.

Wilder, Donald L.: *See—*
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Wildi, Bernard S.; and Miller, Robert E., to Monsanto Company. Protein-acetylinic ester complex to retard digestion in the rumen. 3,718,478, Cl. 99-2.00r.

Wilkin, John P., to Armstrong-Blum Manufacturing Company. Stop gage for band saw conveyor or the like. 3,718,061, Cl. 83-201.000.

Wilkinson, Norman, to Lucas, Joseph, (Industries) Limited. Vehicle direction switch with automatic return and headlight dimmer control. 3,718,784, Cl. 200-61.270.

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Willem Gilbert C.; and Farmer, Ray H., to United States of America, Army. Dynamic lead guidance system for homing navigation. 3,718,293, Cl. 244-3.160.

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Williams, Donald E., to Acra-Plant, Inc. Clearing attachment for planter shoes. 3,718,191, Cl. 172-196.000.

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Williams, Olin A., Jr.; and Peatman, John B. Technique for correlation method of determining system impulse response. 3,718,813, Cl. 235-181.000.

Williams, Raymond; and Leckenby, Robert Edwin, to United Kingdom Atomic Energy Authority. Air bearings. 3,718,379, Cl. 308-9.000.

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Wilson, Arthur L., to Lee, Raymond, Organization, Inc., The. Reciprocating motor with conductive disc armature. 3,718,829, Cl. 310-27.000.

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Wilson, James C., to Matsushita Electronics Corporation. Fused circuit breaker. 3,718,878, Cl. 337-7.000.

Wilson, Walter W., to Bliss, E. W., Company. Forming press system and workpiece handling and transfer apparatus therefor. 3,718,216, Cl. 214-1.0bc.

Wilson, Warren K., to Goodyear Tire & Rubber Company, The. Solid state polymerization process. 3,718,621, Cl. 260-75.00m.

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Wood, Paul A. Block and building construction using same. 3,717,967, Cl. 52-259.000.

Woodle, Robert A., to Texaco Inc. Means and method for controlling a solvent refining unit to provide optimum yields of refined oil and extract oil. 3,718,809, Cl. 235-151.120.

Woods, William G.; Whiten, Joseph G.; and Nies, Nelson P., to United States Borox & Chemical Corporation. Halogenated polymeric compositions containing zinc borate. 3,718,615, Cl. 260-28.000.

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Words on Wheels Limited: *See—*
Clements, Paul Bernard, 3,718,775.

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Wright, Roy. Bean vine cutter. 3,717,984, Cl. 56-229.000.

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Wylie, Richard D.; and Morrison, Bobby, to Deering Milliken Research Corporation. Coin machine. 3,717,940, Cl. 34-236.000.

Wysocki, Joseph J.; Adams, James E.; Becker, James H.; Madrid, Robert W.; and Haas, Werner E., to Xerox Corporation. Imaging system in which either a liquid crystalline material or an electrode is shaped in an image configuration. 3,718,380, Cl. 350-160.0l.

Wysocki, Joseph J.; Adams, James E.; Becker, James H.; Madrid, Robert W.; and Haas, Werner E. L., to Xerox Corporation. Liquid crystal imaging system in which an electrical field is created by an x-y address system. 3,718,382, Cl. 350-160.0lc.

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Yamamoto, Yoshiro; and Tajihi, Michio, to Kabushiki Kaisha Yamamoto Kogyosho. Device for developing two-component diazo photosensitive material. 3,718,080, Cl. 95-94.00g.

Yamase, Toshihiro: *See—*
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Yamauchi, Akira. Nursing bottle device. 3,718,140, Cl. 128-252.000.

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Yates, Paul C., to Du Pont de Nemours, E. I., and Company. Process for silicate-perlite structures. 3,718,491, Cl. 106-84.000.

Yavorsky, Paul M.; and Gorin, Everett, to Consolidation Coal Company. Reduction of aqueous thiosulfate solutions containing formate with carbon monoxide. 3,718,691, Cl. 260-542.000.

Ygfors, Goran, to Ygfors Trading AB. Manufacture of scissors, tongs, pliers or the like cutting or gripping tools. 3,717,921, Cl. 29-407.000.

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Yokota, Mitsuhisa; and Sato, Hiroya, to Tokyo Shibaura Electric Co., Ltd. Control system for an extraction turbine system. 3,718,837, Cl. 317-13.00r.

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Yonker, John F.: *See—*
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Yorkshire Imperial Metals Limited: *See—*
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Yoshida, Hideyuki, to Matsushita Electric Industrial Co., Ltd. Arc starting stud welding method. 3,718,801, Cl. 219-99.000.

Yoshioka, Michio: *See—*
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Zeugner, Horst; Eickstedt, Klaus-Wolf Von; Stuhmer, Werner; and Funke, Siegfried, to Kali-Chemie Aktiengesellschaft. Substituted phenylacetonitriles. 3,718,666, Cl. 260-340.300.

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Zondler, Helmut; and Pfleiderer, Wolfgang, to Ciba-Geigy AG. Curable mixtures of epoxide resins and piperidine derivatives. 3,718,610, Cl. 260-2.00n.

Zurovskis, Egon; and Egnaczak, Raymond K., to Xerox Corporation. Imaging apparatus. 3,718,393, Cl. 355-8.000.

Zusmanovich, Lev Markovich, to Tsentrglny Nauchno-Issledovatelsky i Proektno-Experimentalny Institut Inzhenernogo Oborudovania Gorodov. Air conditioning installation. 3,718,008, Cl. 62-309.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF FEBRUARY, 1973

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Benthimer, Floyd D.: *See*—
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Pallyenko, Paul, and Coates. Re. 27,587.
Dean, Duff L., and K. E. Balliet, by Triple D Industries, Inc., to Triple D Industries, Inc. Boat fender structures. Re. 27,589, 2–27–73, Cl. 114—219.
Hausermann, Elmer P. Apparatus for shaping electrodes. Re. 27,588, 2–27–73, Cl. 51—157.
Pallyenko, Paul, and H. W. Coates, to Celanese Corp. Treating vehicle for polyester filamentary material and method of improving the properties of such material. Re. 27,587, 2–27–73, Cl. 260—29.20.
Postolowski, John. Devices for dispensing tinsel and the like adaptable for decorating Christmas trees. Re. 27,585, 2–27–73, Cl. 88—225.
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Jessel, Walter H., Jr., and Duffett. 3,313.
Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,311, 2–27–73, Cl. 80.
Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,313, 2–27–73, Cl. 80.
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Horgan, William J., Jr. 226,365.
Burcliff Industries: *See*—
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Daher Co., Inc.: *See*—
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Dallaire, Dominique and R. M. Extruded plastic header track for a window unit. 226,374, 2–27–73, Cl. D13—6.
Dallaire, R. M.: *See*—
Dallaire, Dominique and R. M. 226,374.
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Dorman, William H., to Corning Glass Works. Fresnel lens. 226,395. 2–27–73, Cl. D48—16.
Draper, Walter R., and T. A. Poulton, to Parson Chain Co. Ltd. Swivel connector for joining ends of chains or the like. 226,369, 2–27–73, Cl. D8—252.
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Johns, Mary B. Figurine. 226,387, 2–27–73, Cl. D29—23.
Johnson, Dean W., to Burcliff Industries. Coil and switch combination. 226,384, 2–27–73, Cl. D26—13.
Jones, William E., to Miles Laboratories, Inc. Storage tray for microscope slides. 226,408, 2–27–73, Cl. D87—1.
Joonase, Paul, and R. R. Perdue, to W. R. Grace & Co. Combined display and packaging tray for meat or the like. 226,373. 2–27–73, Cl. D9—242.
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CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 27, 1973

NOTE.—First number, class; second number, subclass; third number, patent number

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